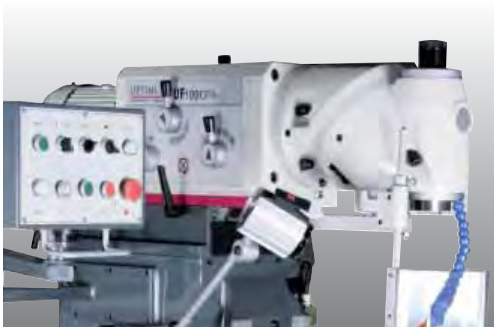
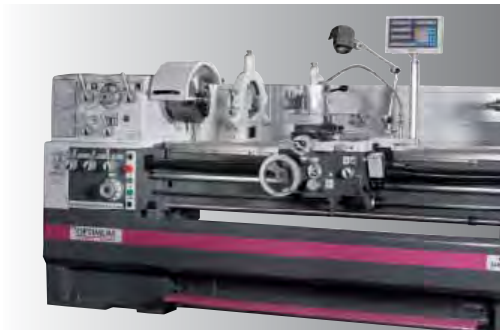
OPTIMUM®
MASCHINEN - GERMANY

Metal working machines

Table drilling machines
Upright drilling machines
Geared drilling machines
Milling machines
Lathes
Measuring instruments
Metal belt saws
Metal circular saws
Grinding machines
Polishing machines
Sheet metal working machines
Mandrel presses
CNC machines
Accessories

OPTIMUM®
MASCHINEN - GERMANY

quantum®
MASCHINEN - GERMANY

Main catalogue 2010/2011

Optimum factory, Yangzhou China

Quality at an economical price
OPTIMUM® and quantum® metal working machines

Our goal is to satisfy your wishes

For over 15 years we have been developing, designing and manufacturing **OPTIMUM®** and **quantum®** products.
All our products distinguish themseves by quality, accuracy, durability and consistent value. Our products are developed by ourselves in a high degree. Beside our own production plants, we only produce with manufacturers who can comply with our high quality requirements. Our knowledge serves the constant development and improvement of our products.

The products

You're looking for a functional machine offering comprehensive performance features at an optimum value? Then you make the right decision by purchasing **OPTIMUM®** or **quantum®** metal working machines. Our machines are convincing by outstanding quality, precision manufacturing and are offering an "OPTIMUM" in price and performance.

Production

Since 2003 **OPTIMUM®** produces the majority of its metal processing machines in its own factory at Yangzhou in China. On site we employ our own staff as well as German production managers and persons responsible for the quality management.

Inauguration of Optimum Yangzhou 2003

Testing a machine

Acceptance on site

Manufacturing on CNC machines

The OPTIMUM® quality guarantee

All OPTIMUM® and quantum® products are produced considering high quality requirements.

After-Sales-Service

Should you need our after-sales-service, we and your locally specialized dealer will be at your disposal with an experienced service team. A comprehensive stock of spare parts which is available at our head office provides you with short-time delivery of spare parts, if necessary. Our service guarantees you consistent value of your machine for many years.

Distribution

OPTIMUM® and **quantum®** machines are available at your competent locally specialized dealer. There is a comprehensive network of specialized dealers and sales parties which support you in every way possible.

Europe-wide representation

We are working together with expert partners in all European countries.

Thomas Collrep & Kilian Stürmer
Chief executive officers

Assembly milling machines

Assembly lathes

Assembly drilling machines

Manufacturing on CNC machines

Technical department

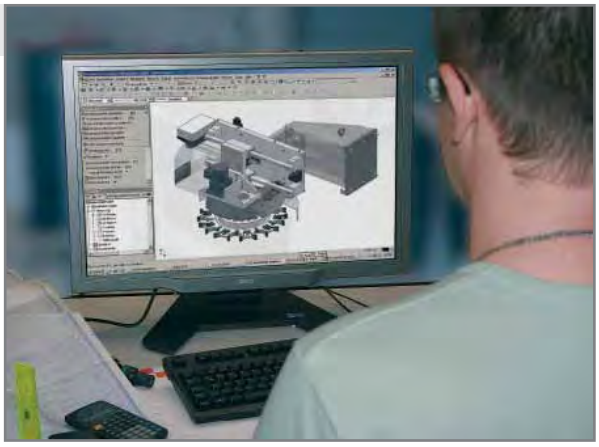
Our technical department offers a competent and well co-ordinated team of technically highly qualified specialists. Their well founded expert knowledge allows flexible and creative realizing of all requirements which are demanded from our products and services.

Planning

Already during the planning phase our technical department intervenes in the development of new products which are manufactured at our factory as well as at the factories of our partners. In this way all market influences and customer requirements are immediately integrated when setting the course for a successful product design takes place.

Development

The development work is solely performed using most modern 3D CAD software by creating a virtual machine model. In doing so, beside the optimum functionality of the machine we also pay attention to the reusability of data which are created during the development phase.
Such data do not only serve to elaborate manufacturing documents and documentations, but also to calculate, for computer-aided manufacturing as well as to visualize and simulate the product.



Testing in practice

Our engineers combine theory and practice. In order that nothing is left to chance regarding the product satisfaction, application-technological tests are performed on all machines at which also selected customers are consequently integrated. In this way any new product firstly has to prove itself during everyday work before it is becoming a inherent part of our range of products.
The technical analysis helps us to recognize and eliminate any remaining weak points.

Certification

Anybody who is purchasing one of our machines desires to permanently rely on its safety.
Our machines have successfully passed the certification procedure which entitles us to provide them with the CE sign. We declare on our own responsibility that all machines and accessories comply with the specifications of the CE guidelines. The current state-of-the-art is documented by CE declaration of conformity and by the CE label.

Protecting the copyright

In order to continuously protect our technical development work for us as well as for our customers, a legal protection of patents and registered designs is essential. In this way we continuously maintain the technical advance of OPTIMUM products.

Technical documentation

Nowadays, operating instructions represent an essential part of the product.
Our technical authors are able to achieve a high standardized level which complies with all legal requirements or even exceeds them. These enormous efforts serve our customers as quick reference guide of the machine and also guarantee the continuous and safe operation.

Technical customer support

Our customers may rightly expect that our specialists are using their knowledge and experience to their utmost satisfaction. Our product consultants support the user with technical information. A phone hotline as well as an info mail account is available which our customers may use in order to receive qualified information or troubleshooting in short time.

Technical department

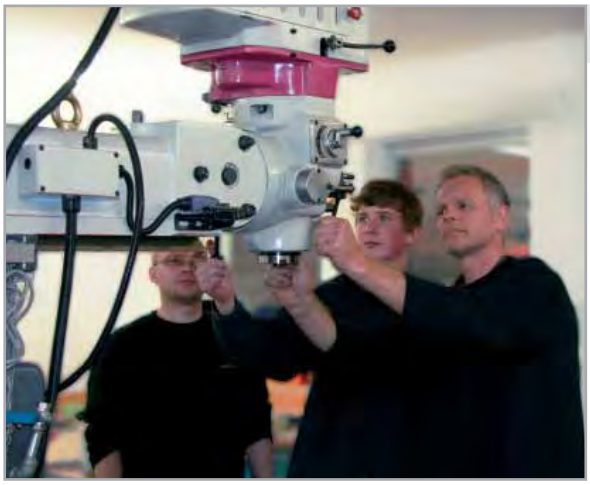
The basis for the continuously high customer satisfaction as well as of our current and future market success lies in the clear technical orientation of our employees.

Training

The success in handling our products is mainly determined by passing the technical knowledge on to the sales and service employees by consequent internal training measures. This qualification forms the basis in order to be able to guarantee a skilled, qualified
advice and troubleshooting at any customer contact. This qualification also includes customers performing workshops at our facility or training measures on site.

Sales support

The requirements in OPTIMUM machines are not less manifold than the workpieces and the manufacturing demands of our end customers. The whole application-specific knowledge of our engineers is available to our representatives and specialized dealers in case of any questions which might arise.
In qualified and clarifying sales talks we will help our customers in adapting the product choice to their corresponding needs.



Service support

If service is required our OPTIMUM engineers are ready to support the shop in rapid and target-oriented
maintenance with their experience.
In close cooperation with the service centre and its internal and external employees any weak points are analyzed and customer requirements are noted down. Such records are evaluated with regard to technical points of view and laid down in a specific requirement and measurement catalogue.

Market investigation

The market investigation is one of the most important tasks in order to be able to recognize trends in time and to adapt the products to the customer requirements or to extend the range of products. Our application specialists and designers have the task to reconcile the requirements and technically realizable items without loosing sight of the usual cost-efficient price/performance ratio of OPTIMUM products.

Supplier support

Regular meetings with our engineers contribute to transfer our new developments and enhancements purposefully to the serial production. This direct support at our production plants is essential in order to produce the quality products in which our customers trust since more than 20 years.

Production support

A team of employees directly influences the production process on site by regular trainings and tests. Only due to this intensive support at the place of manufacture we are able to literally achieve the OPTIMUM .

Quality assurance

Quality tests with a continuous documentation are the basis of a consistent good product quality. Therefore, we assist the quality thoughts in all departments of our company.
Regular goods receiving inspections are an essential part of our quality assurance measures taken at OPTIMUM. Competent employees in the fields of electrical engineering, safety engineering and application engineering test the incoming goods according to firmly defined verification keys.

TABLE OF CONTENTS

Drilling machines

Opti B 17 Pro / B 23 Pro/ B 26 Pro / B 33 Pro ..... 10 - 11
Opti B 23 Pro Vario / B 26 Vario / B 33 Pro Vario .... 12 - 13
Opti B 16 H / B 24 H / B 28 H / B 34 H ..... 14 - 15
Opti B 16 HV / B 24 HV / B 28 HV / B 34 HV ..... 16 - 17
Opti B 30 BS Vario ..... 18 - 19
New Opti B 30 VGM ..... 20 - 21
New Opti B 40 E /B 40 PTE ..... 22 - 23
Opti B 40 GSP / B 40 GSM ..... 24 - 25
Opti B 50 GSM ..... 26 - 27
quantum B 140 T / B 160 T ..... 190 - 191
quantum B 13 / B 14 / B 16 / B 20 192
quantum B 25 / B 32 193
quantum RB 6 T / RB 8 S ..... 194 - 195
Machine vices drilling 29
Accessories drilling ..... 30 - 31
New Therm Drill ..... 32 - 33
Accessory tables drilling 34

Milling machines

quantum BF 16 Vario ..... 196 - 197
Opti BF 20 Vario / BF 20 L Vario ..... 36 - 37
New Opti F 40 E ..... 38 - 39
Opti BF 30 Vario ..... 40 - 41
New Opti BF 46 Vario / BF 46 TC ..... 42 - 43
Opti WF 20 Vario ..... 44 - 45
New MF 1 Vario ..... 46 - 47
Opti MF 2 Vario / MF 4 Vario ..... 48 - 49
Opti UF 100-DPA ..... 50 - 51
Accessory tables milling ..... 52 - 53
Milling machine vices ..... 54 - 55
Accessories milling ..... 56 - 63

Lathes

quantum D 140 x 250 Vario 199
Opti D 180 x 300 Vario 65
quantum D 210 x 400 / D 250 x 550 ..... 200 - 201
Opti D 240 x 500 G / D 280 x 700 G/ Vario ..... 66 - 67
Opti D 320 x 630 / D 320 x 920 ..... 68 - 69
Opti D 330 x 1000 ..... 70 - 71
Opti D 360 x 1000 ..... 72 - 73
Opti D 420 x 1000 / D 420 x 1500 ..... 74 - 75
Opti D 460 x 1000 / D 460 x 1500 / D 460 x 2000 . 76 - 77
Opti D 560 x 1500 / D 560 x 2000 / D 560 x 3000 . 78 - 79
New Opti D 660 x 2000 / D 660 x 3000 ..... 80 - 81
Accessory tables turning ..... 82 - 83
Accessories turning ..... 84 - 91

Machine lamps 93

Measuring instruments

Digital position indication DPA 2000 95
Digital position indication DPA 2000 S ..... 96 - 97
Digital 3-axes positioning magnetic measuring system MPA 3 98
Machine spirit level 99
Dial gauge 99
Precision magnetic measuring tripod 99
Outside micrometer kit 99
Precision measuring tool kit MS 4 99

Metal belt saws

quantum S 91 G / S 121 G 202
quantum S 181 203
Opti S 100 G 101
Opti S 130 GH 102
Opti S 181 G 103
Opti S 210 G / S 275 G ..... 104 - 105
Opti S 290 G ..... 106 - 107
Opti S 350 G ..... 108 - 109
Opti S 350 GA ..... 110 - 111
Saw belt information 116

Metal circular saws

Opti CS 275 / CS 315 ..... 112 - 113

Accessories for saws

Material stand MSR 4 / MSR 7 114

Grinding machines

SM 300 New Double grinder Opti SM 175 - SM 300 118
Double grinder QSM 150 / QSM 175 / QSM 200 204
New Grinding tool SL-1/SL-2 119
Opti BSM 75 / BSM 150 ..... 120 - 121
Belt and disc grinding machine Opti DBS 75 122
Drill bit grinder Opti DG 20 124
Disc sander quantum TS 305 205

Polishing machines

Opti PSM 200 Polish / PSM 250 Polish 123

CNC

CNC-Controller III / CNC-Controller VI ..... 126 - 127
CNC-Controller IV „high power“ ..... 128 - 129
CNC complete and assembly kit BF 20 Vario ..... 130 - 131
CNC complete and assembly kit BF 30 Vario ..... 132 - 133
CNC complete and assembly kit BF 46 Vario ..... 134 - 135
CNC complete and assembly kit D240/D280 ..... 136 - 137
CNC complete and assembly kit D320 ..... 138 - 139
Housings 140
Power Drive 1 141
CNC assembly kit MT RT1 / MT RT 2 141
Mega NC 2010 ..... 142 - 145
pcdreh ..... 146 - 149
New M2 CNC ..... 150 - 151
M3HS CNC ..... 152 - 153
New M4 CNC / M4HS CNC ..... 154 - 155
New F 100 CNC ..... 156 - 157
F 100 TC CNC ..... 158 - 159
New F 110 TC CNC ..... 160 - 161
New F 210 TC CNC ..... 162 - 163
New L 28 CNC ..... 164 - 165
New L 33 CNC ..... 166 - 167
SYMplus milling ..... 168 - 171
SYMplus turning ..... 172 - 175
Sinumerik 802 S base line ..... 176 - 177
Sinumerik 802 D SL ..... 178 - 179
New Sinumerik 828 D ..... 180 - 183
New Shop Mill 184
New Shop Turn 185
Kit for beginners ..... 186 - 187
Machine vices 188

Metal working

Folding machines FP 30 / Three rolls round BM 3 206
Bench-type vice WBS 135 207
Steel sheet machining SAR 1000 210
Steel slitting shears PS 125 / PS 150 / PS 300 208
Mandrel presses DDP1 / DDP2 / DDP 3 209

Drilling machines

Table drilling machines

Upright drilling machines

Geared drilling machines

Accessories drilling

Table and upright drilling machines perfect to be used in workshops and repair services

- Guaranteed true running accuracy of less than 0.02 mm measured in the drilling spindle sleeve
- Drilling spindle with precision ball bearings
- RÖHM quick-action drill chuck supplied as standard
- Largely dimensioned, height-adjustable screening grid with safety switch
- High smoothness due to aluminium V-belt pulleys and grinded multi-tooth dog (from Opti B 23 Pro)
- Considerably higher power transmission due to toothed quality V-belts
- V-belt covering with safety switch
- Precisely machined work table with diagonally running T-slots
- Height adjustment of the drilling table via toothed rack
- Drill depth stop
- Worktable can be inclined by ± 45° and slewed by 360°
- Solid, largely dimensioned base plate with slots, heavily ribbed at the rear side (for B 33 Pro T-slots)
- One-piece star grip made of diecast aluminium with soft grip handle
- Easy-to-operate safety switch (IP 54 compliant) with low-voltage release and emergency-stop pushbutton
- 400 volt types additionally with right-/left-handed rotation
- Smooth running and powerful electric motors
- Heavy construction of the whole machine

Tool of the year 2005
Heimwerker Praxis

Fig.: **B 17 Pro**

Model	Opti B 17 Pro	Opti B 23 Pro	Opti B 26 Pro	Opti B 33 Pro
Item No	300 3171	300 3231 (230 V)	-	-
€ plus VAT	**309.00**	**479.00**	-	-
Item No	-	300 3233 (400 V)	300 3263	300 3333
€ plus VAT	-	**489.00**	**549.00**	**890.00**
Features				
Electrical connection				
Motor	500 W 230 V ~50 Hz	750 W 230/400 V ~50 Hz	750 W 400 V ~50 Hz	1.1 kW 400 V ~50 Hz
Drilling capacity				
Drilling capacity in steel (St. 37)	Ø 16 mm	Ø 25 mm	Ø 25 mm	Ø 30 mm
Continuous drilling cap. steel	Ø 12 mm	Ø 20 mm	Ø 20 mm	Ø 25 mm
Spindle seat				
Spindle seat	MT 2	MT 2	MT 3	MT 4
Spindle sleeve stroke	65 mm	80 mm	85 mm	120 mm
Throat	152 mm	180 mm	210 mm	254 mm
Speeds				
Spindle speeds	500 - 2'520 rpm	200 - 2'440 rpm	200 - 2'440 rpm	120 - 1'810 rpm
Number of steps	5 steps	12 steps	12 steps	9 steps
Drilling table				
Table size Length x width	235 x 220 mm	280 x 250 mm	330 x 290 mm	475 x 425 mm
T-slot size	12 mm	12 mm	14 mm	14 mm
Drilling table inclinable	± 45°	± 45°	± 45°	± 45°
Drilling table slewable	360°	360°	360°	360°
Distance spindle - table (max.)	325 mm	360 mm	720 mm	695 mm
Distance spindle - stand (max.)	530 mm	610 mm	1.230 mm	1.180 mm
Dimensions				
Column diameter	60 mm	73 mm	80 mm	92 mm
Length x width x height	600 x 260 x 860 mm	650 x 320 x 1.010 mm	700 x 350 x 1.670 mm	860 x 480 x 1.720 mm
Total weight	39 kg	66 kg	82 kg	135 kg
Scope of delivery	Morse taper MT 2 - B 16	Morse taper MT 2 - B 16	Morse taper MT 3 - B 16	Morse taper MT 4 - B 16
	RÖHM quick-action drill chuck (3 - 16 mm) B16			
	T-slots			

Fig.: **B 23 Pro**

Fig.: **B 26 Pro**

Fig.: **B 33 Pro**

- Guaranteed true running accuracy of less than 0.02 mm measured in the drilling spindle
- Drilling spindle with precision ball bearings
- High-quality RÖHM quick-action drill chuck supplied as standard
- Largely dimensioned, height-adjustable screening grid with safety switch

Aluminium V-belt pulleys

- Smooth running
- Ground multitooth dog (from Opti B 23 Pro)
- Considerably better power transmission due to the quality toothed V-belt
- V-belt covering with safety switch

Infinitely variable table and upright drilling machines for permanent use

- Guaranteed true running accuracy of less than 0.02 mm measured in the drilling spindle sleeve
- Drilling spindle with precision ball bearings
- 12 speeds, infinitely variable for Opti B 23 Pro Vario and Opti B 26 Pro Vario
- 9 speeds, infinitely variable for Opti B 33 Pro Vario
- High torque at all speeds
- Drill depth stop
- Worktable can be inclined by ± 45° and slewed by 360°
- "Made in the "EU"
- Heavy construction of the whole machine

Fig.: **B 26 Pro Vario**

Fig.: **B 33 Pro Vario**

Model	Opti B 23 Pro Vario	Opti B 26 Pro Vario	Opti B 33 Pro Vario
Item No	301 1233	301 1263	301 1333
€ plus VAT	**1'229.00**	**1'339.00**	**1'649.00**
Features			
Electrical connection			
Motor	750 W 400 V ~50 Hz	750 W 400 V ~50 Hz	1.5 kW 400 V ~50 Hz
Drilling capacity			
Drilling capacity in steel (St. 37)	Ø 25 mm	Ø 25 mm	Ø 30 mm
Continuous drilling capacity steel	Ø 20 mm	Ø 20 mm	Ø 25 mm
Spindle seat			
Spindle seat	MT 2	MT 3	MT 4
Spindle sleeve stroke	80 mm	85 mm	120 mm
Throat	180 mm	210 mm	254 mm
Speeds			
Spindle speeds	30 - 3'500 rpm	30 - 3'500 rpm	20 - 3'500 rpm
Number of steps	12 steps, infinitely variable	12 steps, infinitely variable	9 steps, infinitely variable
Drilling table			
Table size Length x width	280 x 245 mm	330 x 290 mm	475 x 425 mm
T-slot size	12 mm	14 mm	14 mm
Drilling table inclinable	± 45°	± 45°	± 45°
Drilling table slewable	360°	360°	360°
Distance spindle - table (max.)	360 mm	720 mm	695 mm
Distance spindle - stand (max.)	610 mm	1'230 mm	1'180 mm
Dimensions			
Column diameter	73 mm	80 mm	92 mm
Length x width x height	660 x 320 x 1'010 mm	710 x 350 x 1'670 mm	870 x 480 x 1'720 mm
Total weight	75 kg	90 kg	140 kg
Scope of delivery	Morse taper MT 2 - B 16	Morse taper MT 3 - B 16	Morse taper MT 4 - B 16
	RÖHM quick-action drill chuck (3 - 16 mm) B16, 2 T-slots		

Very smooth and **vibration-free running**
- Aluminium V-belt pulleys
- Ground multitooth dog

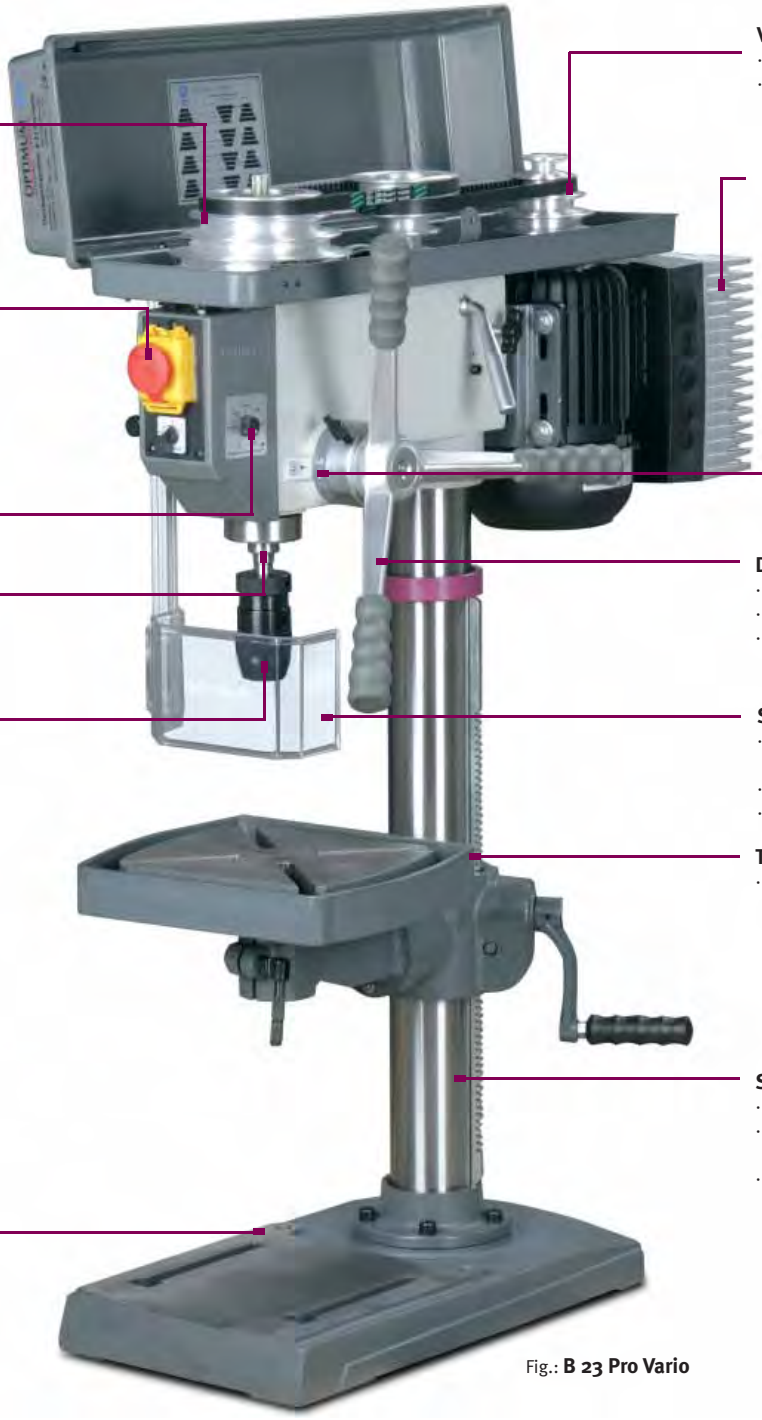
Safety switch
- Protection class IP 54
- Low voltage release
- Emergency-stop push button
- Right-/left handed rotation
- Easy-to-operate

Speed control
- by potentiometer

True running accuracy of
- less than 0.02 mm measured in the drilling spindle sleeve

Drilling spindle
- Precision ball bearing
- High-quality RÖHM quick-action drill chuck supplied as standard

Base plate
- Solid
- Largely dimensioned
- Heavily ribbed at the rear side



V-belt
- Toothed
- Considerably better power transmission

Industrial engine with frequency converter
- Smooth running
- Long-life
- Extremely tractable
- Largely constant torque progression

Drill depth stop

Diecast aluminium star grip
- Long and ergonomic
- Cast of one piece
- Soft grip handles for a safety working

Spindle protection
- Best possible protection of the user
- Height-adjustable
- Micro switch

Table height adjustment
- via toothed rack

Steel column
- Thick-walled
- High power intake and stability
- 5-fold screwed

Fig.: **B 23 Pro Vario**

Drilling table support
- Extremely solid and thick-walled

Drilling table
- Precisely machined
- Transversally running T-slots
- ± 45° inclinable / 360° slewable

Spindle speeds
- Very wide speed range from **30 - 3'500 rpm** for Opti B 23 Pro Vario/ Opti B 26 Pro Vario and
- **20 - 3'500 rpm** for Opti B 33 Pro Vario

V-belt covering
- With safety switch

Table and upright drilling machines with V-belt drive for craftsmen and training workshops

- Guaranteed true running accuracy of less than 0.015 mm measured in the drilling spindle sleeve
- Largely dimensioned, height-adjustable screening grid with safety switch for best possible protection of the user
- Long, ergonomic one-piece star grip made of diecast aluminium with soft grip handles (OPTI B 16 H / B 24 H)
- Triple star grip made of steel (OPTI B 34 H / B 28 H)
- Solid, largely dimensioned base plate with T-slots, heavily ribbed at the rear side
- Usable for particularly high workpieces by slewing away the drilling table
- Emergency-stop push button
- Right-/left handed rotation
- Easy tool change by integrated drill drift (from B 28 H on)
- Drilling spindle with precision ball bearings
- Drill depth stop
- V-belt covering with safety switch
- Digital depth gauge (OPTI B 34 H)
- Digital spindle speed display (OPTI B 34 H)
- Machine lamp (from OPTI B 24 H)
- Drilling table slewable by 360°
- Smooth running and powerful electric motors

Fig.: **B 16 H**

Model	**OPTI B 16 H**	**OPTI B 24 H**	**OPTI B 28 H**	**OPTI B 34 H**
Item No (230 V)	302 0216	302 0241	-	-
Item No (400 V)	-	302 0243	302 0283	302 0333
€ plus VAT	**549.00**	**995.00**	**1'195.00**	**1'890.00**
Features				
Electrical connection				
Motor	550 W 230 V ~50 Hz	850 W 230/400 V ~50 Hz	850 W 400 V ~50 Hz	1.5/2.2 kW 400 V ~50 Hz
Drilling capacity				
Drilling capacity in steel (St. 37)	Ø 13 mm	Ø 24 mm	Ø 28 mm	Ø 34 mm
Continuous drilling capacity steel	Ø 11 mm	Ø 20 mm	Ø 24 mm	Ø 26 mm
Spindle seat				
Spindle seat	MT 2	MT 2	MT 3	MT 4
Spindle sleeve stroke	65 mm	85 mm	105 mm	160 mm
Throat	130 mm	165 mm	200 mm	285 mm
Speeds				
Spindle speeds	600 - 4'200 rpm	350 - 4'000 rpm	120 - 4'000 rpm	145 - 4'800 rpm
Number of steps	5 steps	7 steps	16 steps	2 x 9 steps
Drilling table				
Table size Length x width	230 x 245 mm	280 x 300 mm	340 x 360 mm	420 x 400 mm
T-slot size	12 mm	14 mm	14 mm	14 mm
Distance spindle - table (max.)	370 mm	515 mm	860 mm	790 mm
Working surface stand L x W	200 x 240 mm	280 x 260 mm	320 x 320 mm	390 x 370 mm
Distance spindle - stand (max.)	495 mm	681 mm	1'275 mm	1'025 mm
Dimensions				
Column diameter	60 mm	80 mm	92 mm	115 mm
Length	549 mm	665 mm	698 mm	918 mm
Width	300 mm	434 mm	449 mm	585 mm
Height	848 mm	998 mm	1'721 mm	1'895 mm
Total weight	65 kg	84 kg	140 kg	274 kg
Scope of delivery	Morse taper MT 2 - B 16	Morse taper MT 2 - B 16	Morse taper MT 3 - B 16	Morse taper MT 4
	quick-action drill chuck (1 - 13 mm) B16	quick-action drill chuck (1 - 16 mm) B16	quick-action drill chuck (1 - 16 mm) B16	quick-action drill chuck (1 - 16 mm)
	T-slots	T-slots	T-slots	T-slots

Fig.: **B 24 H**

Fig.: **B 28 H**

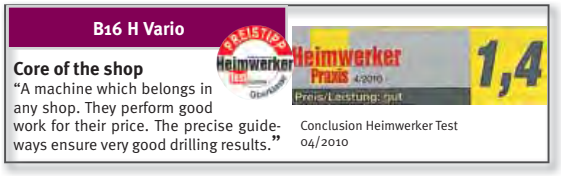
Fig.: **B 34 H**

- Guaranteed true running accuracy of better than 0.015 mm measured in the drilling spindle sleeve
- V-belt quick-action clamping
- Largely dimensioned, height-adjustable screening grid with safety switch
- Digital depth gauge (B 34 H)
- Digital spindle speed display (B 34 H)

7 M Industrial V-belt

- Guaranteed service life of the V-belts up to 10'000 operating hours. (For 4 operating hours and 200 days per year, this corresponds to a service life of 12 years)

Table and upright drilling machine in Vario-type with infinitely variable speed control for craftsmen and training workshops


B16 H Vario
Core of the shop
"A machine which belongs in any shop. They perform good work for their price. The precise guide-ways ensure very good drilling results."
Heimwerker Praxis 4/2010
1,4
Conclusion Heimwerker Test 04/2010

- Guaranteed true running accuracy of less than 0.015 mm measured in the drilling spindle sleeve
- Largely dimensioned, height-adjustable screening grid with safety switch for best possible protection of the user
- Long, ergonomic one-piece star grip made of diecast aluminium with soft grip handles (OPTI B 16 H / B 24 H)
- Triple star grip made of steel (OPTI B 34 H / B 28 H)
- Right-/left-handed rotation (from OPTI B 24 H Vario on)
- Drilling spindle with precision ball bearings
- Drill depth stop
- Sleeve travel for B 34 H Vario 160 mm
- Simple tool change due to ejection mechanism (from B 28 H Vario on)
- V-belt covering with safety switch
- Digital depth gauge (OPTI B 34 H Vario)
- Machine lamp (from OPTI B 24 H Vario on)
- Drilling table slew-able by 360°
- Coolant equipment (from B 28 H Vario on)
- B 34 H Vario with operating mode Threading/Auto
- Smooth running and powerful electric motors
- Optimum price/quality ratio
- Stable in value

Fig.: **B 16 H Vario**

Fig.: **B 24 H Vario**

Model	**OPTI B 16 H VARIO**	**OPTI B 24 H VARIO**	**OPTI B 28 H VARIO**	**OPTI B34 H VARIO**
Item No	302 0218	302 0245	302 0285	302 0335
€ plus VAT	**1'250.00**	**1'749.00**	**2'150.00**	**2'590.00**
Features				
Electrical connection				
Motor	1.5 kW 230 V ~50 Hz	1.5 kW 230 V ~50 Hz	1.5 kW 230 V ~50 Hz	2.2 kW 230 V ~50 Hz
Drilling capacity				
Drilling capacity in steel (St. 37)	Ø 16 mm	Ø 24 mm	Ø 28 mm	Ø 34 mm
Continuous drilling capacity steel	Ø 13 mm	Ø 20 mm	Ø 24 mm	Ø 26 mm
Spindle seat				
Spindle seat	MT 2	MT 2	MT 3	MT 4
Spindle sleeve stroke	65 mm	85 mm	105 mm	160 mm
Throat	130 mm	165 mm	200 mm	285 mm
Speeds				
Spindle speeds	100 - 7'500 rpm	100 - 5'950 rpm	35 - 5'600 rpm	40 - 5'000 rpm
Number of steps	5 steps, infinitely variable	4 steps, infinitely variable	12 steps, infinitely variable	9 steps, infinitely variable
Drilling table				
Table size Length x Width	230 x 245 mm	280 x 300 mm	340 x 360 mm	420 x 400 mm
T-slot size	12 mm	14 mm	14 mm	14 mm
Distance spindle - table (max.)	370 mm	515 mm	860 mm	790 mm
Working surface stand L x W	200 x 240 mm	280 x 260 mm	320 x 320 mm	390 x 390 mm
Distance spindle - stand (max.)	495 mm	681 mm	1'275 mm	1'025 mm
Dimensions				
Column diameter	60 mm	80 mm	92 mm	115 mm
Length	540 mm	665 mm	701 mm	918 mm
Width	370 mm	434 mm	474 mm	595 mm
Height	850 mm	998 mm	1'755 mm	1'930 mm
Total weight	65 kg	85 kg	141 kg	290 kg
Scope of delivery	quick-action drill chuck (1 - 13 mm)	quick-action drill chuck (1 - 16 mm)	quick-action drill chuck (1 - 16 mm)	quick-action drill chuck (1 - 16 mm)
	Morse taper MT 2	Morse taper MT 2	Morse taper MT 3	Morse taper MT 4
	T-slots	T-slots	T-slots	T-slots
			Coolant pump	Coolant pump

Fig.: **B 28 H Vario**

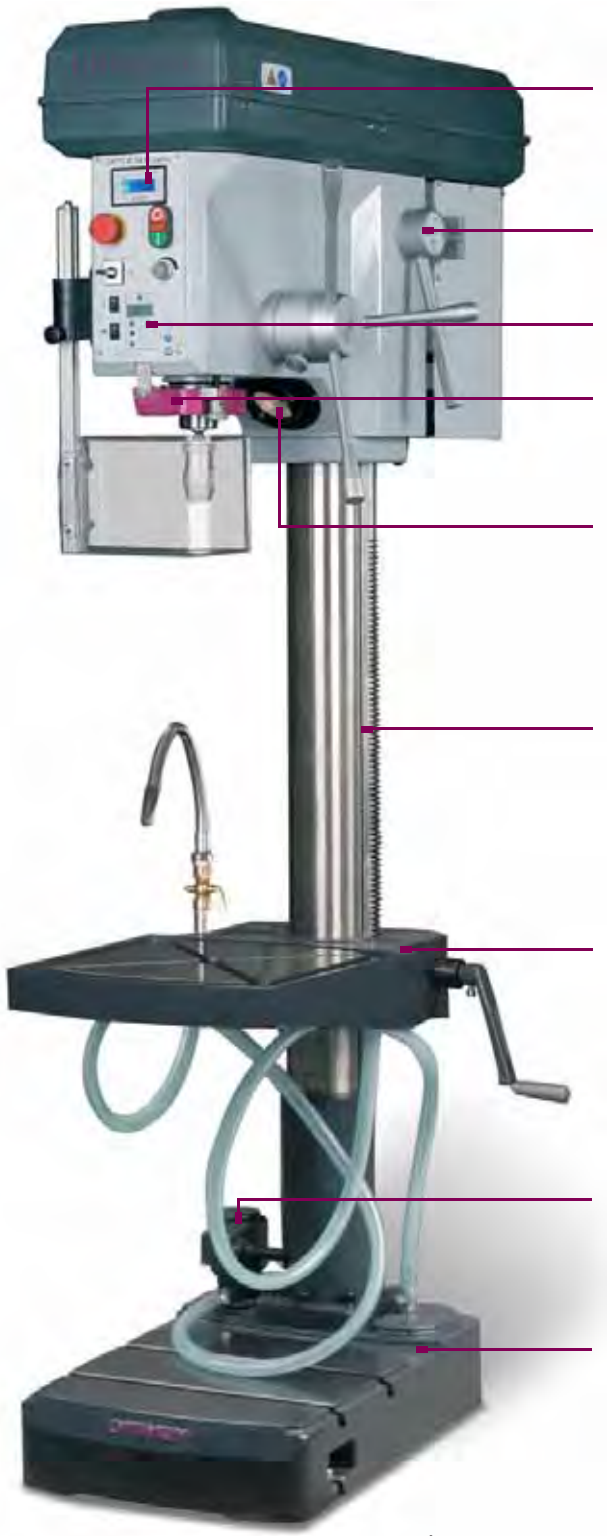


Fig.: **B 34 H Vario**

Digital speed display
- 4-digit value
- Easy-to-read

Quick-action clamping
- Easy clamping of the V-belt

Digital depth gauge
- Accuracy of the display 0.01 mm

True running accuracy of
- Less than 0.015 mm measured in the drilling spindle sleeve

Machine lamp
- Integrated in the milling head
- Halogen lamp (from B 24 H Vario on)

Casting column
- Thick-walled
- Screwed for a high power intake and stability

Drilling table
- Height-adjustable via toothed rack
- Precisely machined
- Transversally running T-slots

Coolant equipment
- Supplied as standard (for B 28 H Vario/B 34 H Vario)
- Capacity of coolant tank 4.5 l

Base plate
- May be used for extra high work-pieces with the work table slewed to one side
- Solid
- Largely dimensioned
- Precisely machined at the surface
- Parallel running T-slots

Operating mode "Auto"

auto · In the automatic mode, the engine will start automatically upon lifting the lever and stops in the initial position. In this way it is not necessary to press the pushbutton Start and Stop for repeated drilling tasks.

Operating mode "Threading"

· The engine is being activated by moving the star grip downward. The turning direction is changed by pressing the end switch on the adjustable drilling depth stop

Upright drilling machine with powerful, infinitely variable speed regulation. Perfect for do-it-yourselfers and apprenticing companies

- Smooth and high-performance DC drive with excellent control characteristics
- Drilling spindle with precision ball bearings
- Large sleeve travel of 125 mm
- High running smoothness due to aluminium V-belt pulleys and ground multi tooth dog
- Vario Speed (speed controlled)
- Right-/left handed rotation
- Considerably higher power transmission without slip due to the quality V-belts 7M
- Height adjustment of the drilling table via toothed rack
- Adjustable drill depth stop
- Triple star grip made of steet
- Emergency-stop push button
- Digital depth gauge, accuracy of the display 0.01 mm, reversible mm/inch
- Simple tool change due to ejection mechanism of the drill/cone
- Height-adjustable screening grid with safety switch for best possible protection of the user
- Coolant equipment and coolant tank
- Digital speed display
- Threading mode
- Automatic mode

Operating mode "Auto"

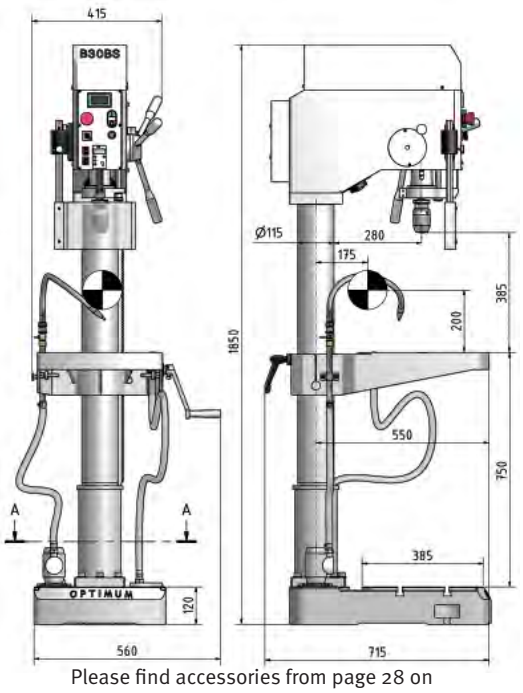
- In the automatic mode, the engine will start automatically upon lifting the lever and stops in the initial position. This way, it is not necessary to press the push button Start and Stop for repeated drilling tasks.

Operating mode "Threading"

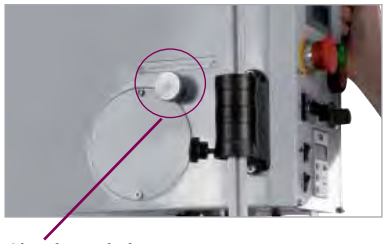
- The engine is being activated by moving the star grip downward. The turning direction is changed by pressing the end switch on the adjustable drilling depth stop

Model	OPTI B 30 BS Vario
Item No	302 1303
€ plus VAT	**2'990.00**
Features	
Electrical connection	
Motor	2.2 kW 230 V ~50 Hz
Motor coolant pump	40 W
Drilling capacity	
Drilling capacity in steel (St. 37)	Ø 30 mm
Continuous drilling capacity steel	Ø 28 mm
Threading in steel (St. 37)	M16
Spindle seat	
Spindle seat	MT 3
Spindle sleeve stroke	125 mm
Throat	285 mm
Speeds	
Spindle speeds	30 - 3'900 rpm
Number of steps	4 steps, infinitely variable
Drilling table	
Table size Length x width	400 x 500 mm
T-slot size	14 mm
Drilling table slewable	360°
Distance spindle - table (max.)	780 mm
Working surface stand L x W	270 x 390 mm
Distance spindle - stand (max.)	1'230 mm
Dimensions	
Column diameter	115 mm
Length	715 mm
Width	560 mm
Height	1'850 mm
Total weight	280 kg
Scope of delivery	Quick-action drill chuck (0 - 16 mm) B16
	Morse taper MT 3 - B 16
	Coolant pump
	T-slots

Dimensions



Please find accessories from page 28 on



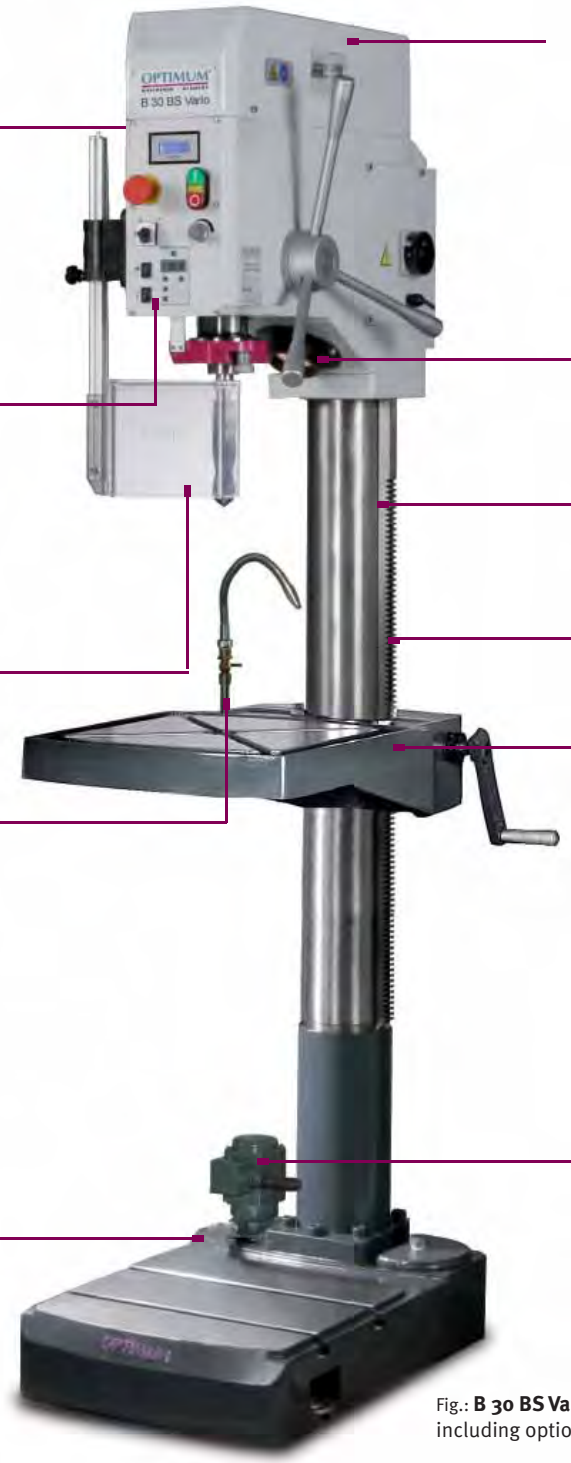
Simple tool change due to an ejection mechanism:
- Push the ejection device and then press the star grip upwards - the taper mandrel will be pressed out of the drilling spindle

Control panel
- Digital speed display
- Emergency-stop push button
- Selector switch operating mode/ direction of rotation
- Potentiometer
- Coolant switch
- Switch machine lamp
- Digital depth gauge
  Accuracy of the display 0.01 mm

Spindle protection
- Best possible protection of the user
- Height-adjustable
- Micro switch

Coolant hose
- Dosing valve
- Stop valve

Base plate
- May be used for extra high workpieces with the worktable slewed to one side
- Solid
- Precisely machined at the surface



Quick-action belt clamping
- Quick-action belt clamping of the belt via excenter

Machine lamp
- Integrated in the milling head
- Halogen lamp

Casting column
- Thick-walled
- For high power intake and stability

Table height adjustment
- Via toothed rack

Drilling table
- Largely dimensioned
- Solid
- Precisely machined
- Transversally running T-slots
- Heavily ribbed at the rear side
- Double clamping

Coolant equipment
- Supplied as standard
- Coolant tank integrated in the base plate
- Capacity of coolant tank 4.5 litres

Fig.: **B 30 BS Vario**
including optional accessories

- **In order to optimize the drilling capacity an additional speed level is available**
- Considerably higher power transmission without slip due to the quality V-belts 7M
- High smooth running due to aluminium V-belt pulleys and a ground multitooth dog

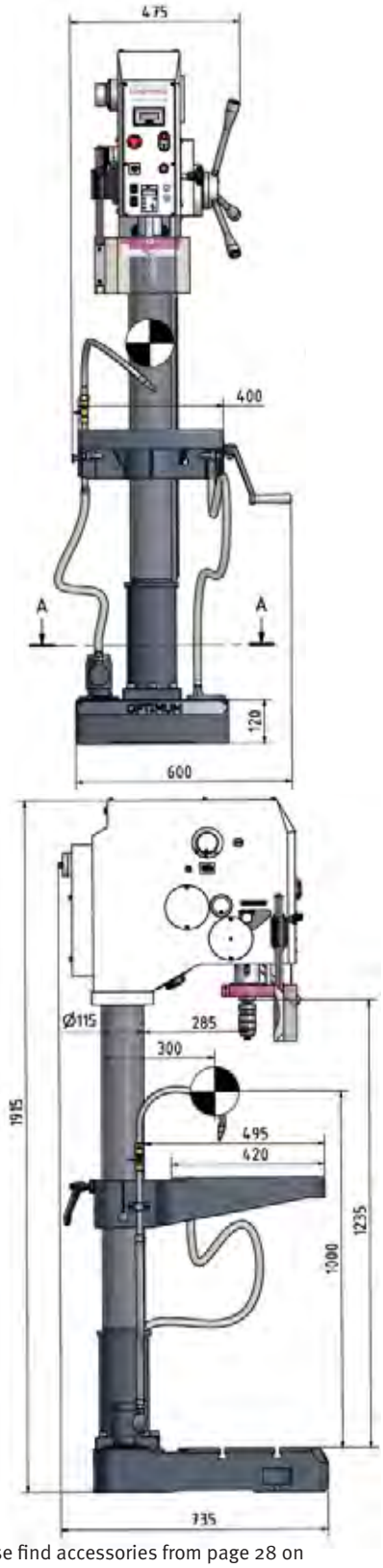
Level	1	2	3	4
Speed	30 - 300 rpm	120 - 1'200 rpm	240 - 2'400 rpm	390 - 3'900 rpm
Torque	100 Nm	25 Nm	13 Nm	6 Nm

Gear drilling machine with automatic spindle sleeve feed combined with a powerful, infinitely variable speed regulation

- Heavy, solid cast iron construction
- Smooth running and stability due to a largely dimensioned, thick-walled casting column
- High true running accuracy due to hardened and ground work spindle
- High smooth running due to grinded gearwheels
- Threading mechanism
- Lockable main switch
- Brushless drive
- Spindle locking with integrated drill drift for a simple tool change (monitored)
- Height-adjustable spindle protection with microswitch to prevent chips and parts from flying off, for best possible protection of the user
- Thread cutting mode
- Electromagnetic spindle sleeve feed
- Large speed range

Model	**Opti B 30 VGM**
Item No	303 4303
€ plus VAT	**3'390.00**
Features	
Electrical connection	
Motor	2.5 kW 230 V ~50 Hz
Motor coolant pump	40 W
Drilling capacity	
Drilling capacity in steel (St. 37)	Ø 30 mm
Continuous drilling capacity (St. 37)	Ø 24 mm
Throat	285 mm
Spindle sleeve stroke	125 mm
Spindle seat	
Spindle seat	MT 3
Spindle sleeve feed (St. 37)	0.1 mm/rev up to Ø 30 mm
	0.15 mm/rev up to Ø 24 mm
	0.2 mm/rev up to Ø 20 mm
Speeds	
Spindle speeds	80 - 3'000 rpm
Number of steps	3 steps, infinitely variable
Drilling table	
Table size (L x W)	400 x 500 mm
T-slot size	14 mm
Distance spindle - table (max.)	780 mm
Working surface stand (L x W)	385 x 385 mm
Distance spindle - stand (max.)	1'320 mm
Dimensions	
Column diameter	115 mm
Length x width x height	600 x 735 x 1'915 mm
Total weight	305 kg
Scope of delivery	Quick-action drill chuck 0 - 16 mm
	Morse taper MT 3
	Drill chuck protection
	Machine lamp
	Coolant equipment

Dimensions



Please find accessories from page 28 on

New
in the product range

Digital speed display
- Easy-to-read
- Integrated in the housing

Simple tool change due to ejection mechanism
- Insert ejection mechanism then push the star grip upward - thus the taper mandrel is pressed out of the drilling spindle

Automatic spindle sleeve feed
- For deep drillings or pocket hole drillings, the coupler of the automatic spindle sleeve feed can be opened or closed at any time by actuating the spindle feed switch

Machine lamp
- Integrated
- 12 V Halogen lamp

Spindle protection
- For best possible protection of the user
- Height-adjustable
- Microswitch

Drilling table
- Largely dimensioned, solid and precisely machined
- Transversally running T-slots
- Heavily ribbed at the rear side
- Height-adjustable via toothed rack
- Rotation of 360° through its own axis and about the column

Casting column
- Thick-walled and solid
- For high power intake

Coolant equipment
- Supplied as standard

Base plate
- Solid with T-slots
- Precisely machined at the surface
- Usable as a working surface for extra high workpieces due to the rotatable drill table

Level	L	M	H
Speed	80 - 700 rpm	170 - 1'500 rpm	400 - 3'000 rpm
Torque	40 Nm	16 Nm	8 Nm

Universal gear drilling machines equipped with gearbox and 12 speeds. B 40 PTE additionally equipped with automatic feed and slewable drilling table.

- Heavy, solid cast iron construction
- Handwheel for spindle sleeve fine feed, easy-to-operate
- Largely dimensioned drilling table, massive and precisely worked with diagonally running T-grooves, heavily ribbed at the rear side and double clamped
- Speed change easily via gear selector switch at the front side
- Spindle sleeve feed via star grip (B 40 E)
- Coupling to change over from manual rough feed to manual fine feed
- Thick-walled cast-iron column for high power intake and stability
- Table height adjustment via toothed rack
- Coolant equipment
- Drilling head adjustment via toothed rack
- Two-stage motor

B 40 PTE:

- Automatic feed for easy working
- Slewable drilling table

Model	**OPTI B 40 E**	**OPTI B 40 PTE**
Item No	303 4340	303 4345
€ plus VAT	**2'390.00**	**2'750.00**
Features		
Electrical connection		
Motor	1.1/1.5 kW 400 V ~50 Hz	
Coolant pump	40 W	
Drilling capacity		
Drilling capacity in steel (St. 37)	Ø 32 mm	
Continuous drilling capacity in steel	Ø 25 mm	
Spindle sleeve stroke	120 mm	
Spindle sleeve diameter	75 mm	
Throat	285 mm	
Drilling head slewable	180°	
Drilling head turnable	360°	
Spindle seat		
Spindle seat	MT 4	
Speeds		
Spindle speeds	95 - 3'200 rpm	
Number of steps	2 x 6 steps	
Drilling table		
Table size Length x Width	400 x 500 mm	
T-slot size	14 mm	
Drilling table slewable	_	360°
Distance spindle - table (max.)	855 mm	
Working surface stand L x W	270 x 390 mm	
Distance spindle - stand (max.)	1'215 mm	
Dimensions		
Column diameter	115 mm	
Length	735 mm	
Width	600 mm	
Height	1.880 mm	
Total weight	322 kg	
Scope of delivery	Operating tool	
	Quick-action drill chuck (1-16 mm)	

Fig: **B 40 E**
incl. optional accessories

Please find accessories from page 28 on

Control panel
- Easy-to-operate
- Emergency-stop pushbutton
- Change-over switch / step switch
- Coolant pump ON/OFF

Speed change
- Easily via gear selector switch at the front side

Spindle sleeve infeed
- Via handwheel

Drill depth stop
- Millimeter scale
- Adjustable

Spindle protection
- For best possible protection of the user
- Height-adjustable
- Microswitch

Drilling table
- Largely dimensioned
- Solid
- Precisely machined
- Transversally running T-slots
- Heavily ribbed at the rear side
- Double clamping
- Slewable by 360° for B 40 PTE

Base plate
- Usable as a working surface for extra high workpieces due to the rotatable work table
- Solid
- Precisely machined at the surface

Fig: **B 40 PTE**

Height adjustment drilling head
- Via toothed rack

Fig.: B 40 E

Selector rotary switch spindle sleeve feed
(for B 40 PTE)
- Automatic
- For easy working

Casting column
- Thick-walled
- For high power intake and stability

Table height adjustment
- Via toothed rack

Coolant equipment
- Supplied as standard
- Coolant tank integrated in the base plate

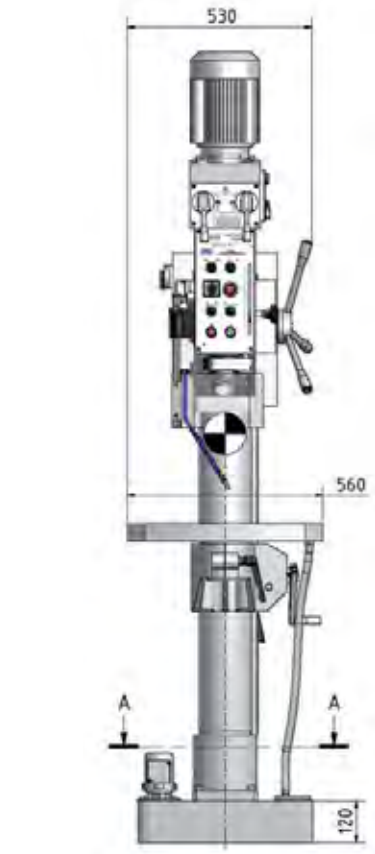
Solid geared upright drill with coolant system and threading mechanism. Opti B 40 GSM additionally with electromagnetic spindle sleeve feed

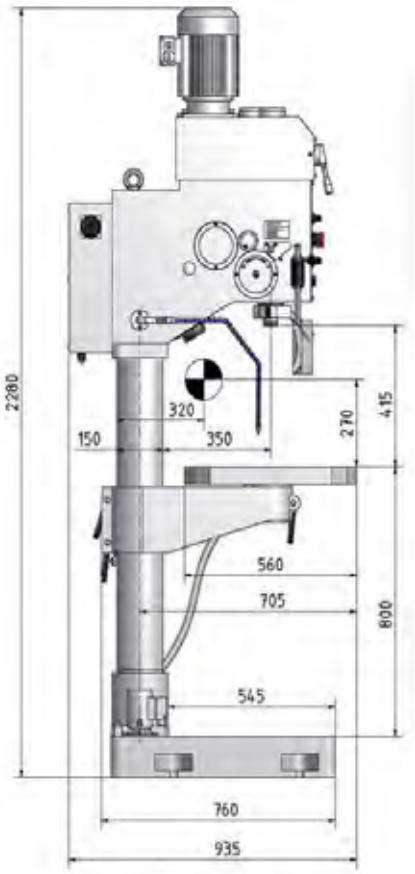
- Heavy, solid cast iron construction
- Height-adjustable screening grid with microswitch to prevent chips and parts from flying off, for best possible protection of the user
- Smooth running and stability due to a largely dimensioned, thick-walled casting column
- Automatic gearwheel lubrication via oil pump
- High true running accuracy due to hardened and ground work spindle
- High smooth running due to grinded gearwheels
- Threading mechanism
- Lockable main switch and protective motor switch
- Spindle locking with integrated drill drift for a simple tool change

- **Opti B 40 GSP with mechanic, 2-fold adjustable spindle sleeve feed**
- **Opti B 40 GSM with electromagnetic spindle sleeve feed**

Model	**Opti B 40 GSP**
Item No	303 4403
€ plus VAT	**3'590.00**
Model	**Opti B 40 GSM**
Item No	303 4400
€ plus VAT	**3'890.00**
Features	
Electrical connection	
Motor	1.5 kW 400 V ~50 Hz
Motor coolant pump	40 W
Drilling capacity	
Drilling capacity in steel (St. 37)	Ø 35 mm
Continuous drilling capacity steel	Ø 35 mm
Threading in steel (St. 37)	M 24
Spindle seat	
Spindle seat	MT 4
Autom. spindle sleeve feed	2 steps, 0.1/0.2 mm/rev
Spindle sleeve feed	180 mm
Throat	350 mm
Speeds	
Spindle speeds	50 - 1'450 rpm
Number of steps	18 steps
Drilling table	
Working surface table (L x W)	560 x 560 mm
T-slot size	18 mm
Distance spindle - table (max.)	780 mm
Working surface stand (L x W)	510 x 500 mm
Distance spindle - stand (max.)	1'320 mm
Dimensions	
Column diameter	150 mm
Length x width x height	935 x 560 x 2'280 mm
Total weight	500 kg
Scope of delivery	Quick-action drill chuck 0 - 16 mm
	Morse taper MT 4
	Drill chuck protection

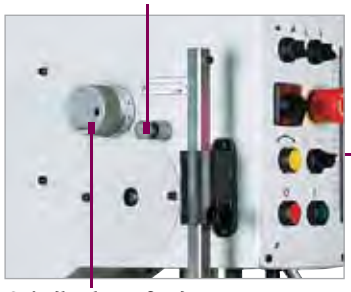
Dimensions





Please find accessories from page 28 on

Simple tool change due to ejection mechanism:
- Push the ejection mechanism and then press the star grip upward - thus the taper mandrel will be pressed out of the drilling spindle.



Spindle sleeve feed
- Automatic
- 2 steps, 0.1/0.2 mm/rev

Machine lamp
- Integrated in the drill head

Spindle protection
- Best possible protection of the user
- Height-adjustable
- Microswitch

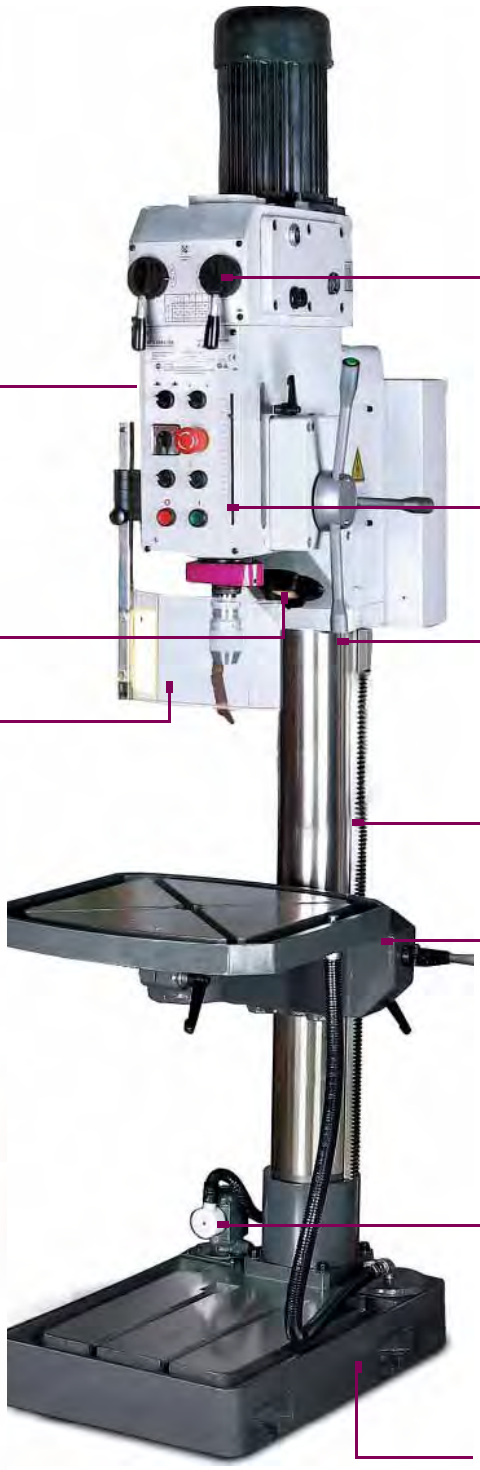


Fig.: **B 40 GSM**

Spindle speeds
- 9 selectable speeds via gear shifting lever at the front of the drill head
- Two-stage driving motor
- 18 speeds from 50 to 1'450 rpm

Drill depth stop
- Adjustable using the millimeter scale

Right-/lefthanded rotation
- For threading

Casting column
- Thick-walled
- High power admission
- Solid

Drilling table
- Largely dimensioned
- Solid
- Precisely machined
- Transversally running T-slots
- Heavily ribbed at the rear side
- Height-adjustable via toothed rack
- Rotation of 360° around its own axis and around the column

Coolant equipment
- Supplied as standard
- Coolant tank integrated in the base plate
- Tank capacity 5 litres
- Conveying capacity 2 l/min.

Base plate
- Solid
- Parallel running T-slots
- Precisely machined at the surface
- Usable as a working surface for extra high workpieces due to the rotatable drill table

Fig.: **B 40 GSP**

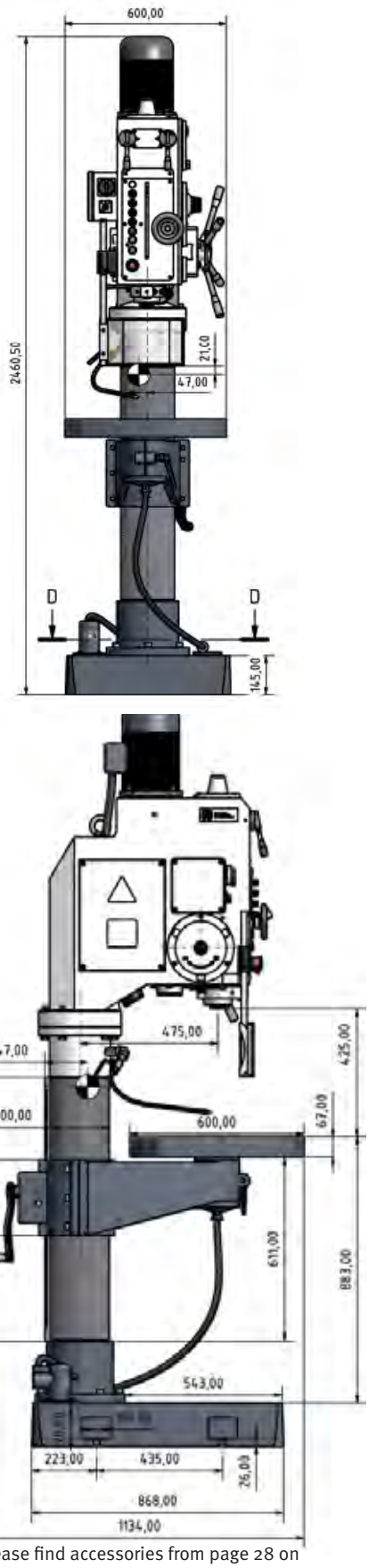
- **OPTI B 40 GSP**
  The automatic spindle sleeve feed is activated by actuating the feed lever. If the preset drilling depth is achieved, the drill depth stop will mechanically push back the feed lever and deactivate the automatic spindle sleeve feed

- **OPTI B 40 GSM**
  For deep drillings or pocket hole drillings, the coupler of the automatic spindle sleeve feed can be opened or closed at any time by actuating the spindle feed switch

Heavy geared drilling machine with coolant system and threading mechanism as well as with electromagnetic sleeve feed

- Heavy, solid cast iron construction
- Smooth running and stability due to a largely dimensioned, thick-walled casting column
- Automatic gearwheel lubrication via oil pump
- High true running accuracy due to hardened and ground work spindle
- High smooth running due to grinded gearwheels
- Threading mechanism
- Lockable main switch and protective motor switch
- Machine lamp integrated in the drill head
- Spindle locking with integrated drill drift for simple tool change
- Height-adjustable screening grid with microswitch to prevent chips and parts from flying off, for best possible protection of the user
- Automatic spindle sleeve drive

Dimensions



Model	OPTI B 50 GSM
Item No	303 4503
€ plus VAT	**6'590.00**
Features	
Electrical connection	
Motor	3.0 / 2.4 kW 400 V ~50 Hz
Motor coolant pump	40 W
Drilling capacity	
Drilling capacity in steel (St. 37)	Ø 50 mm
Continuous drilling capacity in steel	Ø 45 mm
Threading in steel (St. 37)	M 42
Spindle seat	
Spindle seat	MT 4
Autom. spindle sleeve feed	6 steps, 0.05/0.3 mm/rev
Spindle sleeve stroke	230 mm
Throat	375 mm
Speeds	
Spindle speeds	54 - 2'090 rpm
Number of steps	18 steps
Drilling table	
Working surface table Length x width	600 x 600 mm
T-slot size	18 mm
Distance spindle - table (max.)	800 mm
Working surface stand Length x width	600 x 520 mm
Distance spindle - stand (max.)	1'300 mm
Dimensions	
Column diameter	200 mm
Length x width x height	1'134 x 600 x 2'460 mm
Total weight	950 kg
Scope of delivery	Quick-action drill chuck 0 - 16 mm
	Morse taper MT 4
	Drill chuck protection
	T-slots

Please find accessories from page 28 on

Heavy, solid cast iron construction

950 kg

Smooth and stable

Drill depth stop
- Adjustable
- Millimeter scale

Spindle sleeve fine infeed
- Via handwheel

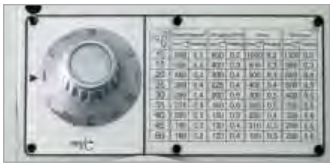
Integrated drill drift
- Simple tool change by means of an ejection mechanism

Drilling table
- Largely dimensioned
- Solid
- Precisely machined
- Transversally running T-slots
- Heavily ribbed at the rear side
- Rotation of 360° through its own axis and about the column
- Coolant gutter

Base plate
- Usable as a working surface for extra high workpieces due to the rotatable drill table
- Solid
- Parallel running T-slots
- Precisely machined at the surface

Fig.: **B 50 GSM**
with optional accessories

Spindle sleeve feed
- Automatic
- The feed will be activated with the pushbutton in the star grip



- Selector rotary switch for speed of the spindle sleeve feed

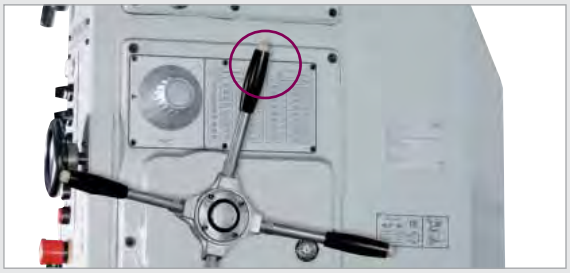
Spindle protection
- Best possible protection of the user
- Height-adjustable
- Microswitch

Casting column
- Thick-walled
- High smooth running and stability
- Column diameter 200 mm

Drilling table
- Double clamping for best possible stability
- Height-adjustable via toothed rack

Coolant equipment
- Supplied as standard
- Coolant tank integrated in the base plate
- Tank capacity 5 litres
- Conveying capacity 2 l/min.

- 9 selectable speeds via gear shifting lever at the front of the drill head and two-stage driving motor allowing 18 speeds



- Automatic spindle sleeve feed with 2 speeds
- For deep drillings or pocket hole drillings, the coupler of the automatic spindle sleeve feed can be opened or closed at any time by actuating the spindle feed switch

Machine vices MSO with prism jaws

- Smooth running
- Exact jaw guiding, also at high axial load
- Spindle with rolled trapezoid thread
- Multiple possibilities for assembly on the drilling table by means of slots

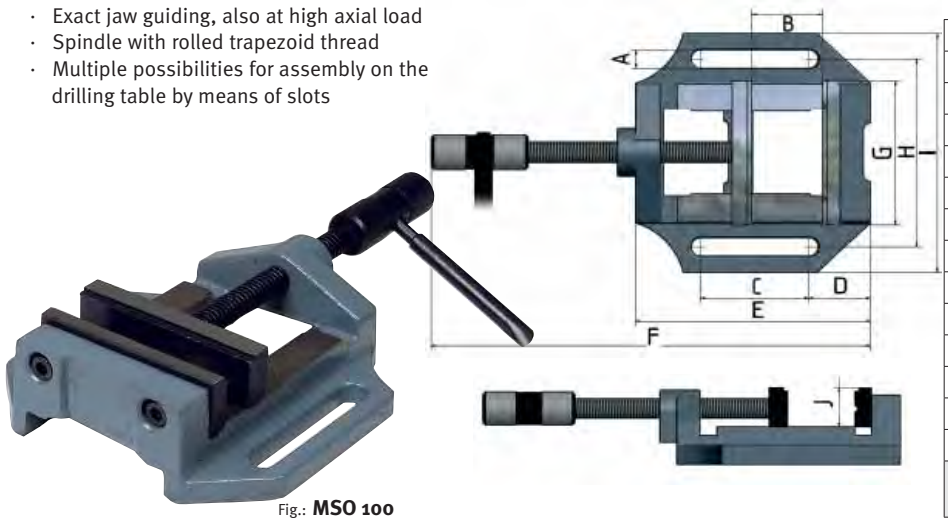


Fig.: **MSO 100**

Machine vices MSO				
	MSO 75	MSO 100	MSO 125	MSO 150
A	12.5	12.5	12.5	14.5
B	55	90	110	130
C	55	74	80	100
D	30	46	46	56
E	126	165	186	222
F	270	350	400	455
G	75	100	125	150
H	100	130	150	170
I	130	165	182	208
J	28	28	30	35
Weight	1.7 kg	3.2 kg	4.5 kg	6.2 kg
Item No	300 0075	300 0100	300 0125	300 0150
€ plus VAT	**19.90**	**22.90**	**26.90**	**29.90**

Machine vices BMS with prism jaws

- Robust type with prism jaws
- Smooth running
- Exact jaw guiding
- Spindle with rolled trapezoid thread
- Multiple possibilities for assembly on the drilling table by means of slots

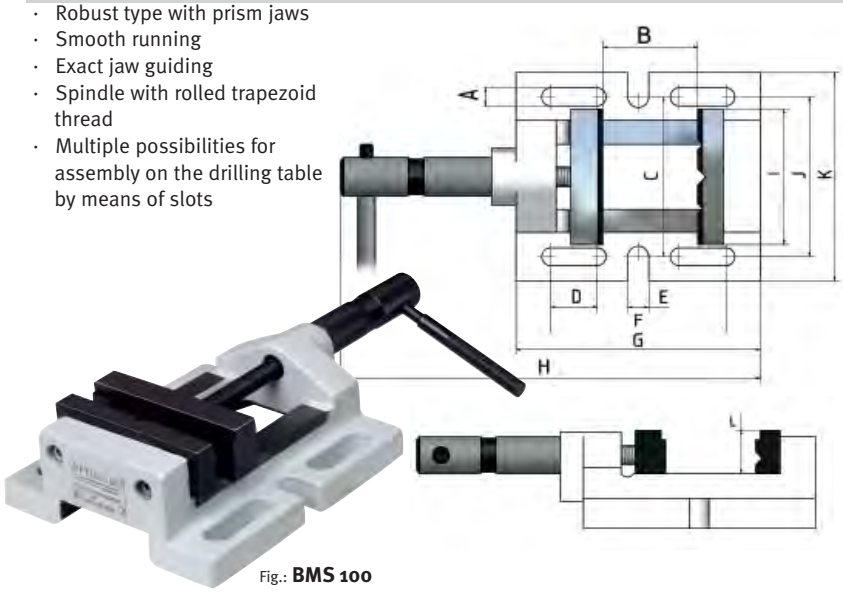


Fig.: **BMS 100**

Machine vices BMS					
	BMS 85	BMS 100	BMS 120	BMS 150	BMS 200
A	11	12.5	12.5	12.5	12.5
B	70	90	110	130	160
C	100	120	140	172	212
D	29	39	48	82	78
E	13	15	14.5	14.5	13,5
F	109	125	146	180	210
G	152	170	193	228	262
H	260	280	330	375	445
I	85	100	120	150	200
J	100	120	140	170	216
K	130	150	170	200	252
L	27	30	35	45	60
Weight	3.5 kg	4 kg	6.5 kg	6.7 kg	8 kg
Item No	300 0008	300 0010	300 0012	300 0015	300 0020
€ plus VAT	**29.90**	**39.90**	**49.90**	**71.00**	**93.00**

Machine vices BSI

- **Drilling machine vices of industrial quality**
- Replaceable prism jaws
- Long guiding of the movable jaw, thus no tilting
- Multiple possibilities for assembly on the drilling table by means of slots
- Prism jaws precision ground
- High-grade grey casting
- Scraped guiding surfaces

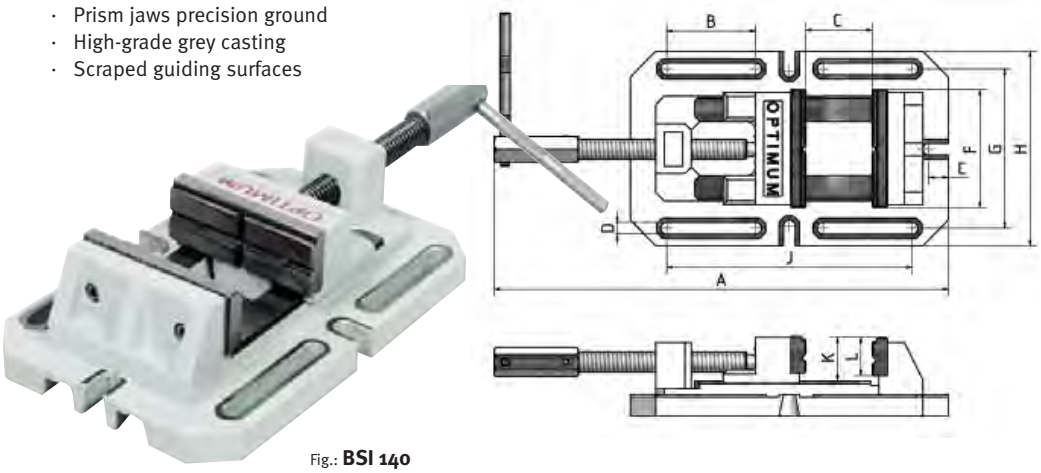


Fig.: **BSI 140**

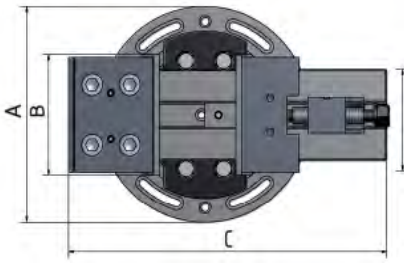
Machine vices BSI			
	BSI 100	BSI 140	BSI 200
A	350-460	455-610	578-788
B	88	105	163
C	110	150	200
D	12	12	16
E	19	23	28
F	100	140	200
G	136	189	250
H	170	230	290
I	12	14	14
J	216	290	406
K	72	90	114
L	40	50	64
Weight	8.7 kg	18 kg	35 kg
Item No	300 0210	300 0214	300 0220
€ plus VAT	**125.00**	**179.00**	**229.00**

OPTIMUM precision modular vices PNM

- Modular vice for the manufacturing of individual and serial parts on CNC milling machines and machining centres
- Rotary table
- Specially appropriate for tool, mold and fixture construction
- Material made of alloyed tool steel
- Guideways hardened and ground
- Rapid orientation on the machine table via longitudinal and transversal gooves
- High precision · Easy handling · Little installation height
- Universally applicable · Usable horizontally and vertically

PNM 100	335 5551	**719.00**
PNM 125	335 5553	**899.00**

Technical data		A	B	C	D	E	F	G	H	kg
PNM 100	mm	180	100	270	85	20	30	95	35	10.3
PNM 125	mm	226	125	345	103	23	40	150	40	18.2



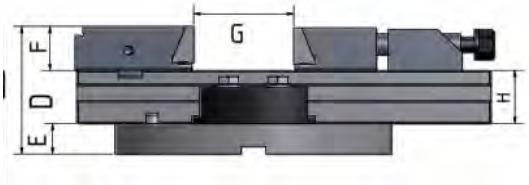


Fig.: PNM 100

End mill kit HSS 20 pieces 338 6200 **105.00**

- 10 milling cutters DIN 327 D · short type · type with **2 cutting edges**
- DIN 1835 B, (3/4/5/6/8/10/12/14/18/20 mm)

and

- 10 milling cutters DIN 844 B · short type · type with **4 cutting edges**
- DIN 1835 B, (3/4/5/6/8/10/12/14/18/20 mm)

All prices plus legally applicable VAT

OPTIMUM cross tables KT

- Coolant gutter
- Dovetail slideway adjustable
- Adjustable handwheel scaling with 0.05 mm division

KT 120	335 6595	**369.00**
KT 179	335 6596	**469.00**
KT 180	335 6591	**579.00**
KT 210	335 6600	**689.00**

Technical data		KT120	KT179	KT 180	KT210
Length	mm	506	748	945	1065
Width	mm	400	483	483	555
Height	mm	140	148	169	200
T-slot size	mm	10	12	12	14
Table length	mm	400	500	700	730
Table width	mm	120	180	180	210
Capacity load cross table	kg	40	55	55	80
Foot width	mm	220	274	274	280
Foot length	mm	280	340	340	362
Travel X-axis	mm	220	280	480	480
Travel Y-axis	mm	165	175	175	210
Net weight	kg	22	32	49	84

Fig.: KT 180

Holding-down clamp kit of 2 pieces

- Adjustable clamping height
- Brass plate below clamping arm protects the material against damages

Table groove **16 mm/M 12**	335 2031	**49.00**

- L x W x H: 115 x 42 x 39 mm; Height adjustment: 0 - 89 mm

Table groove **18 mm/M 16**	335 2032	**59.00**

- L x W x H: 133 x 50 x 49 mm; Height adjustment: 0 - 101 mm

Kit of collet chucks MT 4/M16/OZ25 335 2051 **199.00**

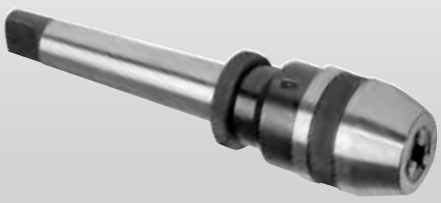
- Collet chuck
- **7 collets**; Sizes Ø6 / Ø8 / Ø10 / Ø12 / Ø16 / Ø20 / Ø25 mm
- Hook spanner
- Plastic case

OPTIMUM Precision quick-action drill chuck		
· True running accuracy better than 0.06 mm		
0 - 8 mm; B16	305 0608	**25.90**
0 - 10 mm; B16	305 0610	**29.90**
0 - 13 mm; B16	305 0623	**31.00**
0 - 16 mm; B16	305 0626	**39.00**

RÖHM quick-action drill chuck		
1 - 13 mm; B 16	305 0656	**45.00**
3 - 16 mm; B 16	305 0657	**49.00**

NEW

OPTIMUM direct quick-action drill chuck		
MT2 1 - 13 mm	305 0572	**61.00**
· up to 8'000 rpm		
MT2 1 - 16 mm	305 0571	**71.00**
· up to 6'000 rpm		
MT3 1 - 16 mm	305 0573	**72.00**
· up to 6'000 rpm		
MT4 1 - 16 mm	305 0574	**72.00**
· up to 6'000 rpm		



Reducing bushes		
MT 3 - MT 2	305 0663	**7.50**
MT 4 - MT 3	305 0664	**12.00**
MT 4 - MT 2	305 0665	**11.90**

Morse taper		
MT 2 - B16	305 0659	**4.90**
MT 3 - B16	305 0660	**7.90**
MT 4 - B16	305 0661	**12.90**
MT 5 - B16	305 0675	**15.90**
MT 6 - B16	305 0676	**19.90**

Extension bushes		
MT 2 - MT 3	305 0667	**17.00**
MT 3 - MT 4	305 0668	**25.00**

Threading attachment M5 - M12	335 2042	**329.00**
· Integrated quick return traverse, immediately effective when changing the feed direction		
· 4-stage adjustable friction clutch		
· With holding fixture B16		
Scope of delivery		
· 2 flexible collets · 2 flat wrenches · 1 Allen key		

Twist drill kit	305 1010	**35.00**

- Coated with titanium
- 25 pcs; sizes 1 -13 mm
- Higher service life and durability
- Higher hardness than hard metal
- More rapid working results
- Low wear
- Metal box

Twist drill HSS with morse taper		

- 9 pcs; sizes 14,5/16/18/20/22/24/26/28/30 mm
- Wooden box

Twist drill MT 2	305 1002	**95.00**
Twist drill MT 3	305 1003	**95.00**

OPTIMUM clamping tool kit SPW 58 pcs		

- Handy wall unit
- Metric threads
- 24 pcs draw-in bolts
- 6 pcs T-slots
- 6 pcs nuts
- 4 pcs connection nuts
- 6 pcs step clamps
- 12 pcs step blocks

SPW 8	335 2015	**69.00**

- T-slots (size 10 mm) draw bar thread M 8

SPW 10	335 2016	**75.00**

- T-slots (size 12 mm) draw bar thread M 10

SPW 12	335 2017	**79.00**

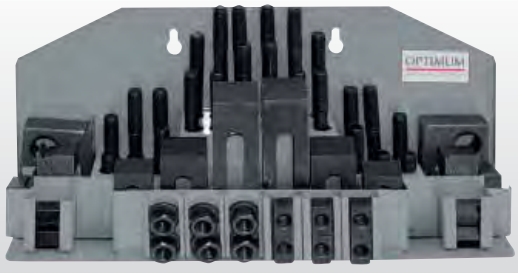
- T-slots (size 14 mm) draw bar thread M 12

SPW 14	335 2018	**89.00**

- T-slots (size 16 mm) draw bar thread M 14

SPW 16	335 2019	**99.00**

- T-slots (size 18 mm) draw bar thread M 16



All prices plus legally applicable VAT

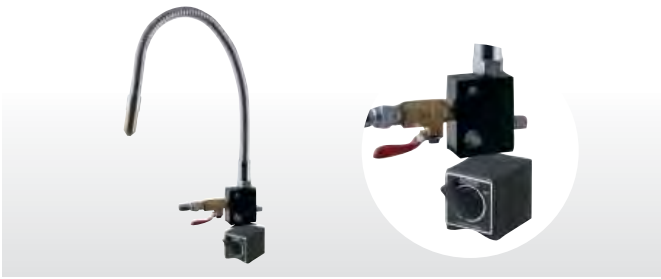
Universal coolant equipment		

- Lift max. 2.5 m
- Conveying capacity 8 l/min
- Tank capacity 11 litres
- Tank size L x W x H: 370 x 245 x 170 mm
- Complete with tank, flexible tube, hose
- With German switch/plug combination
- Magnetic foot attachment of the coolant hose
- For self-assembly

Universal coolant equipment 230 V	335 2002	**189.00**
Universal coolant equipment 400 V	335 2001	**189.00**

Coolant lub. sprayer with mag. stand MMC1	335 6663	**89.00**

- Size of stand L x W x H: 62 x 50 x 55 mm
- Screwed connection for external supply of compressed air
- Adhesion of the magnetic stand 75 kg
- Flexible and stable hose
- Length of the coolant hose 500 mm



Coolant hose KMS 2	335 6660	**39.00**

- Two variable coolant hoses made of individual plastic elements
- Not electrically conductive
- Adhesion of the magnetic stand up to 50 kg
- Length of the coolant hoses 335 mm
- Flexible and stable
- Insensitive to most solvents and chemicals
- Universally applicable on all machine tools

Taper drift		
MSP 1 for MT 1 - MT 3	305 0636	**22.00**
MSP 2 for MT 4 - MT 6	305 0637	**27.00**

THERMDRILL®

Start-Up Kit

+

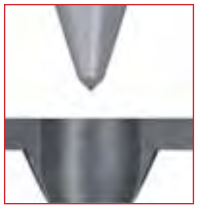
Tool kit

"form" or "cut"
Thermdrill is available in two different types.

Thermdrill flow drill "form"
To manufacture flow holes with collar. The collar forms a planar abutment by which the material flowing upward is transformed to a collar. Advantage: additional threads in the collar

Thermdrill flow drill "cut"
To manufacture flow holes without collar. The type "cut" has cutting edges ground in the collar which cut-off the material flowing upward. Advantage: a "plane" surface is resulting.

form



cut

Start-Up kit Basic equipment for flow drilling	Item No	**€ plus VAT**
Consisting of: 1 x tool holder **MT2** or **MT3** with air ring 1 x open-end wrench 1 x hook spanner 1 x collet 8 mm 1 x thread former M 8 **1 x Thermdrill M 8 "form"** or **"cut"** 1 x lubricant for flow drilling (100 ml) 1 x lubricant for thread molding (100 g) 1 x system case 1 x operating instructins		
Thermdrill start-up kit **"form"** incl. tool holder **MT2**	306 0010	**390.00**
Thermdrill start-up kit **"cut"** incl. tool holder **MT2**	306 0011	**424.00**
Thermdrill start-up kit **"form"** incl. tool holder **MT3**	306 0015	**390.00**
Thermdrill start-up kit **"cut"** incl. tool holder **MT3**	306 0016	**424.00**
Lubricant for flow drilling and thread molding		
Paste for flow drilling (1000 g)	306 0090	**42.00**
Thread molding oil (1000 ml)	306 0092	**32.00**

Tool kit type "form" * 1 x Thermdrill, 1 x thread former	Item No	**€ plus VAT**
FORM 4 - kit M4 (piston 6 mm)	306 0024	**71.00**
FORM 5 - kit M5 (piston 6 mm)	306 0025	**74.00**
FORM 6 - kit M6	306 0026	**81.00**
FORM 8 - kit M8	306 0028	**95.00**
FORM 10 - kit M10	306 0030	**112.00**
FORM 12 - kit M12	306 0032	**131.00**
Tool kit type "cut" * 1 x Thermdrill, 1 x thread former		
CUT 4 - kit M4 (piston 6 mm)	306 0044	**84.00**
CUT 5 - kit M5 (piston 6 mm)	306 0045	**102.00**
CUT 6 - kit M6	306 0046	**114.00**
CUT 8 - kit M8	306 0048	**129.00**
CUT 10 - kit M10	306 0050	**145.00**
CUT 12 - kit M12	306 0052	**164.00**
Accessories		
Threading attachment M5 - M12	335 2042	**299.00**
Collet ER32 / 6 mm	344 1126	**9.90**
Collet ER32 / 8 mm	344 1128	**9.90**
Collet ER32 / 10 mm	344 1130	**9.90**
Collet ER32 / 12 mm	344 1132	**9.90**

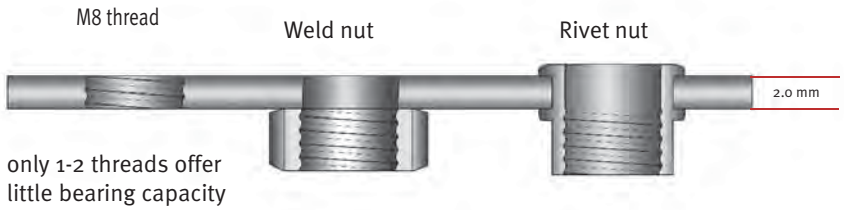
Selection table & speeds (flow drill and thread former)

***** other sizes and intermediated sizes upon request

Thread	Core hole*	recommended max. material thickness		Piston	Tip	Speed range*			Thread forms
	[mm]	[mm]	[mm]	[mm]	[mm]	min.	optimal	›	
		form type	cut type				Steel	Brass Aluminium Copper	
M4	3.7	1.5	2.0	6.0	7.6	2'300	2'600	3'800	1000
M5	4.5	2.0	3.0	6.0	9.1	2'200	2'500	3'700	800
M6	5.4	2.0	3.0	6.0	10.1	2'000	2'400	3'600	650
M8	7.4	2.5	4.0	8.0	13.5	1'600	2'200	3'200	500
M10	9.3	2.5	4.0	10.0	16.2	1'500	2'000	3'000	400
M12	11.0	3.0	4.5	12.0	19.3	1'400	1'800	2'800	350

**Indications of the standard core hole diameter referring to steel with a material thickness of 2.0 mm. The core hole diameter can be adapted by +- 0.1 mm depending on the material quality and material thickness.*

Solution used up to now



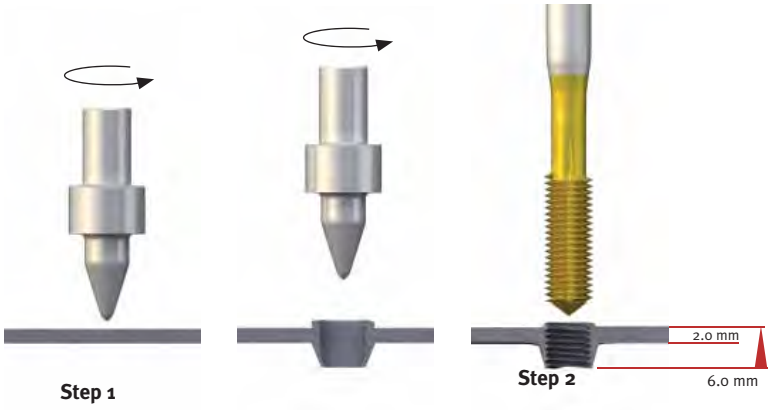
only 1-2 threads offer
little bearing capacity

Missing threads on thin-walled materials generally require the use of weld and rivet nuts

New solution

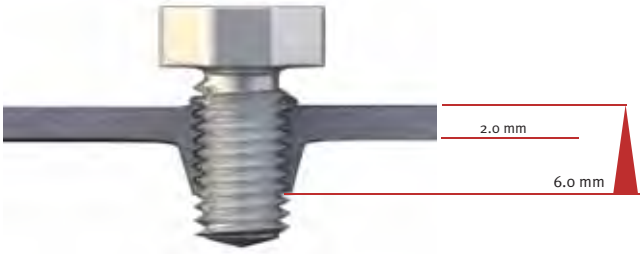
Only 2 working steps to obtain perfect threads

We recommend to use the Thermdrill on our high performance and infinitely variable table and upright drilling machines. Working with a corresponding contact pressure and a speed of about 2'000 rev/min. frictional heat is generated within seconds which allows to transform the material without chips.
A stable, twist-safe thread is resulting – also for round tubes!



Advantages

- Insert nut within seconds
- Twist-safe
- High strength
- Mobile usable for table and upright drilling machines



For technical questions please call the Thermdrill hotline under: +49 60 71 / 92 24 58

Examples of use

Fig.: Handrail

Fig.: Glass holder

Screw threads
Highly stessable screw fastenings with anti- twist protection also for round materials

Time-saving when manufacturing thread-forming taping screws

Bearing areas / Fits
Manufacturing a support by two opposite flow holes reduces the wall thickness required by default and saves weight.

Fig.: Car steering system

We recommend to use the Thermodrill for instance in our Optimum machines:

Opti B 24 H / H Vario
Opti B 28 H / H Vario
Opti B 34 H / H Vario
Opti B 30 VGM
Opti B 30 GS

	Accessories for drilling		B17 Pro	B23 Pro/Vario	B26 Pro/Vario	B33 Pro/Vario	B16 H/Vario	B24 H/Vario	B28 H/Vario	B34 H/Vario	B30 BS Vario	B30 VGM	B40EB40 PTE	B40GSM/GSP	B50 GSM
	Direct quick-action drill chuck MT2	305 0571	●	●	–	○	–	●	○	○	○	○	○	○	○
	Direct quick-action drill chuck MT2	305 0572	●	●	–	○	–	●	○	○	○	○	○	○	○
	Direct quick-action drill chuck MT3	305 0573	–	●	●	○	–	–	●	○	●	●	●	○	○
	Direct quick-action drill chuck MT4	305 0574	–	–	–	●	–	–	–	●	–	–	–	●	●
	Precision quick-action drill chuck 0 - 8 mm, B16	305 0608	●	●	●	●	●	●	●	●	●	●	●	●	●
	Precision quick-action drill chuck 0 - 10 mm, B16	305 0610	●	●	●	●	●	●	●	●	●	●	●	●	●
	Precision quick-action drill chuck 0 - 13 mm, B16	305 0623	●	●	●	●	●	●	●	●	●	●	●	●	●
	Precision quick-action drill chuck 0 - 16 mm, B16	305 0626	●	●	●	●	–	●	●	●	●	●	●	●	●
	Röhm quick-action drill chuck 1 - 13 mm, B 16	305 0656	●	●	●	●	●	●	●	●	●	●	●	●	●
	Röhm quick-action drill chuck 3 - 16 mm, B 16	305 0657	●	●	●	●	●	●	●	●	●	●	●	●	●
	Reducing bushes MT 3 - MT 2	305 0663	–	–	●	–	–	–	●	–	●	●	●	–	–
	Reducing bushes MT 4 - MT 3	305 0664	–	–	–	●	–	–	–	●	–	–	–	●	●
	Reducing bushes MT 4 - MT 2	305 0665	–	–	–	●	–	–	–	●	–	–	–	●	●
	Morse taper MT 2 - B16	305 0659	●	●	–	–	–	●	–	–	–	–	–	–	–
	Morse taper MT 3 - B16	305 0660	–	–	●	–	–	–	●	–	●	●	●	–	–
	Morse taper MT 4 - B16	305 0661	–	–	–	●	–	–	–	●	–	–	–	●	●
	Morse taper MT 5 - B16	305 0675	–	–	–	–	–	–	–	–	–	–	–	–	–
	Morse taper MT 6 - B16	305 0676	–	–	–	–	–	–	–	–	–	–	–	–	–
	Titanium twist drill kit 13 mm	305 1010	●	●	●	●	●	●	●	●	●	●	●	●	●
	Twist drill HSS / MT 2	305 1002	●	●	○	○	–	●	○	○	○	○	○	○	○
	Twist drill HSS / MT 3	305 1003	–	●	●	○	–	–	●	●	●	●	●	○	○
	Threading attachment M5 - M12	335 2042	○	●	●	●	○	●	●	●	●	●	●	●	●
	Taper drift MSP1	305 0636	●	●	●	–	–	●	●	–	●	●	●	–	–
	Taper drift MSP2	305 0637	–	–	–	●	–	–	–	●	–	–	–	●	●
	Clamping tool kit SPW 8	335 2015	–	–	–	–	–	–	–	–	–	–	–	–	–
	Clamping tool kit SPW 10	335 2016	●	●	–	–	●	–	–	–	–	–	–	–	–
	Clamping tool kit SPW 12	335 2017	–	–	●	●	–	●	●	●	●	●	●	–	–
	Clamping tool kit SPW 14	335 2018	–	–	–	–	–	–	–	–	–	–	–	–	–
	Clamping tool kit SPW 16	335 2019	–	–	–	–	–	–	–	–	–	–	–	●	●
	Universal coolant equipment 230 V	335 2002	●	●	●	●	●	●	●	●	●	●	●	○	○
	Universal coolant equipment 400 V	335 2001	–	●	●	●	–	●	●	●	●	●	●	●	●
	Coolant lubricant sprayer MMC 1	335 6663	●	●	●	●	●	●	●	●	●	●	●	●	●
	Coolant hose KMS 2	335 6660	●	●	●	●	●	●	●	●	●	●	●	●	●
	Machine vice MSO 75	300 0075	●	●	●	●	●	●	●	●	●	●	●	○	○
	Machine vice MSO 100	300 0100	●	●	●	●	●	●	●	●	○	○	○	○	○
	Machine vice MSO 125	300 0125	●	●	●	●	●	●	●	●	○	○	○	○	○
	Machine vice MSO 150	300 0150	●	●	●	●	○	●	●	●	○	○	○	○	○
	Machine vice BMS 85	300 0008	●	●	●	●	●	●	●	●	○	○	○	○	○
	Machine vice BMS 100	300 0010	●	●	●	●	●	●	●	●	○	○	○	○	○
	Machine vice BMS 120	300 0012	●	●	●	●	●	●	●	●	○	○	○	○	○
	Machine vice BMS 150	300 0015	●	●	●	●	○	●	●	●	○	○	○	○	○
	Machine vice BMS 200	300 0020	○	○	○	○	–	○	○	○	○	○	○	●	●
	Machine vice BSI 100	300 0210	●	●	●	●	●	●	●	●	●	●	●	○	○
	Machine vice BSI 140	300 0214	○	○	○	○	○	○	○	○	○	○	○	○	○
	Machine vice BSI 200	300 0220	–	–	–	–	–	–	○	–	○	○	○	●	●

● Recommended ○ Partly recommended – Not recommended

This table of accessories includes all recommended options of accessories. Depending on the individual case it may however be practical to use other accessories.

Milling machines

Drilling-milling machines

Multifunctional drilling-milling machines

Universal milling machine

Accessories for milling

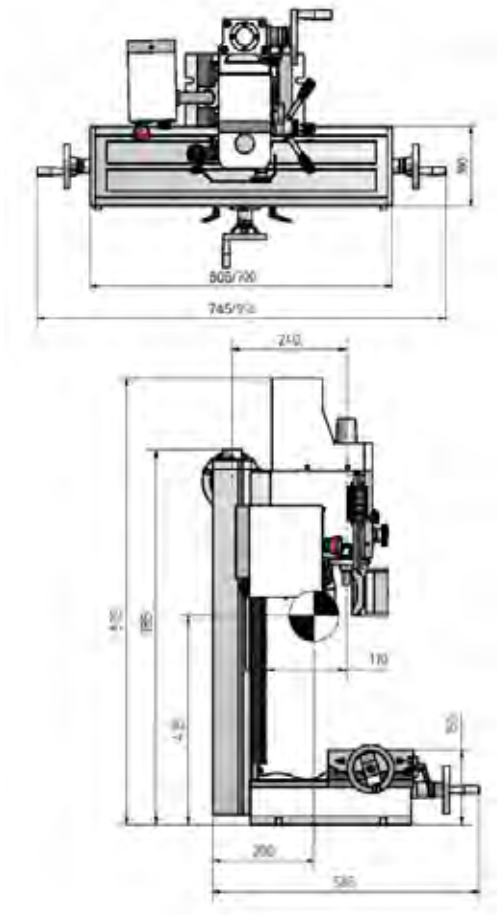
Robust drilling-milling machines with electronic speed variable drive and digital speed display

- Spindle sleeve feed via star grip (drilling)
- Fine adjustment of spindle sleeve when milling
- Feed spindles can be adjusted without clearance due to adjustable spindle nuts
- Robust and precise dovetail control adjustable without clearance with V-ledges
- It is possible to switch the machine on and off using the optional CNC controller via an integrated relay control
- Bellows as guide protection
- Easy and clear operation due to adjustable control panel
- All travels are readable on scales
- Electronic speed variable drive
- The drill head can be inclined by ± 90° thus permitting milling and drilling operations at any angular position
- Height-adjustable and largely dimensioned screening grid
- Accurate infeed by positioning graduated collars on all handwheels

Model	OPTI BF20 Vario	OPTI BF20L Vario
Item No	333 8120	333 8122
€ plus VAT	**1'250.00**	**1 '390.00**
Features		
Electrical connection		
Motor	850 W 230 V ~50 Hz	
Drilling capacity		
Drilling capacity in steel (St. 37)	Ø 16 mm	
Cont drilling capacity steel	Ø 12 mm	
Spindle mount		
Spindle mount	MT 2/M 10	
Milling head diameter max.	Ø 63 mm	
Milling end mill capacity max.	Ø 20 mm	
Spindle stroke	50 mm	
Throat	185 mm	
Drill-milling head		
Swivel range	± 90°	
Travel Z axis*	280 mm	
Gear stages Vario	2 steps, speed variable	
Gear stage low	90 - 1'480 rpm	
Gear stage fast	150 - 3'000 rpm	
Cross table		
Table length	500 mm	**700 mm**
Table width	180 mm	
Travel Y-axis*	175 mm	
Travel X-axis*	280 mm	**480 mm**
T-slot size	12 mm	
T-slot distance	63 mm	
Load of cross table (max.)	55 kg	
Dimensions		
Length	745 mm	950 mm
Width	565 mm	
Height max.	935 mm	
Total weight	103 kg	115 kg
Scope of delivery	Taper mandrel MT 2, B16 M10	
	Draw-in rod M 10	
	Operating tool	

Accessories	Item No	plus VAT
· Milling cutter holding arbor 16 mm MT 2	335 2102	**39.00**
· Arbor for drill chuck MT 2/M10	305 0670	**14.90**
· Cutter head copy & surface milling MT 2	335 0212	**189.00**
· Clamping tool kit SPW 10	335 2016	**75.00**
· Collet kit MT 2/M10	335 1980	**89.00**
· Collet kit MT 2/ER 25	335 2052	**269.00**
· Collet kit MT 2/ER 32	335 2053	**299.00**
· End mill kit HSS, 12 pcs.	335 2113	**59.00**
· Digital magnetic measuringMPA-3	338 3902	**749.00**
· Factory assembly MPA-3	900 0420	**390.00**
· Add-on adapter - to assemble an column and a milling head at the engine bed of the lathes: D240/D280/D250	335 6572	**99.00**
· Add-on adapter - to assemble a high speed engine (up to 26'000 rpm) L x W x H: 120 x 195 x 185 mm Seat: ø 43 mm	335 6571	**99.00**
· Universal base frame with shelf and chip tray L x W x H: 500 x 420 x 900 mm Weight: 35 kg	335 3003	**259.00**

Dimensions



BF20L Vario-CNC

Produkt des Jahres
Leserwahl der Zeitschrift
Maschinen im Modellbau
1. Platz
Maschinen
05.2008

BF20 Vario

"Metal working with Optimum BF20 Vario is pure fun. Powerful, little vibration and quiet. The versatile drilling-milling machine enables the production of workpieces accurate to dimension with well proportioned surfaces."

Heimwerker Test
Spitzenklasse
1,3
03.2004

Motor
- Two-stage gear ratio for a powerful transmission of the motor power (850 W)
- DC motor with permanent current control

Control electronics
- It is possible to switch the machine on and off using the optional CNC controller via an integrated relay control

Speeds
- Large, speed variable speed range from 90 - 3000 rpm
- Clear readable digital speed display
- Right-/left handed rotation

- Start/stop connection for optional CNC controller

Spindle stroke display
- Digital
- Accuracy of the display 0.01 mm
- Reversible mm/inch

Machine lamp
- Integrated in the drill-milling head
- Halogen bulbs capsule, 12V - 10W

Taper roller bearings
- High true running accuracy
- Better than 0.015 mm measured in the spindle sleeve

Column
- Relocatable by 30 mm to both sides, thus there are longer travels also with tilted head and central processing of the workpiece on the cross table

Z column
- Rear side with hole, in this way, it is easy to oil the trapezoid spindle or to grease the recirculating ball screw

Limit stops
- Mechanical
- Adjustable

Length measurement scale
- Embedded in the cross table
- Easy-to-read

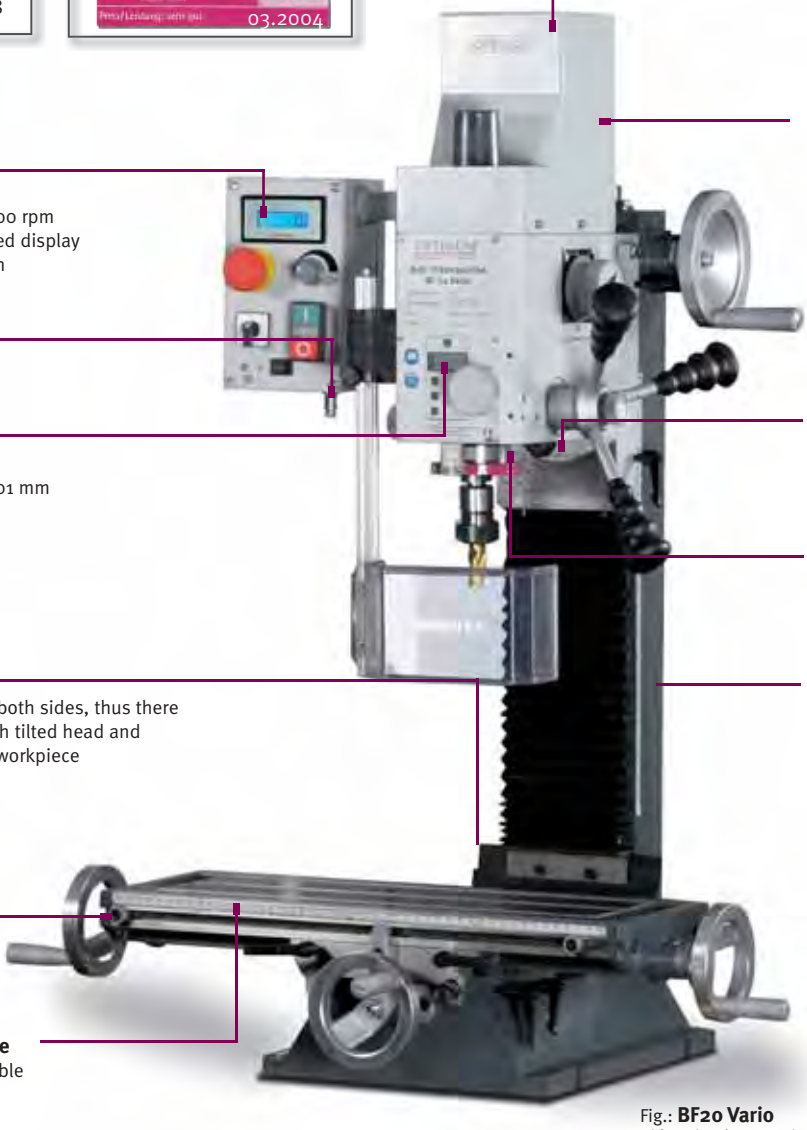
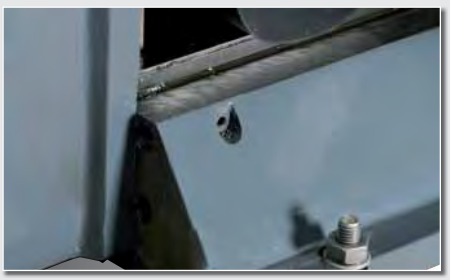


Fig.: **BF20 Vario**
with optional accessories

Fig.: **BF20L Vario CNC**
Please find further information from page 130 on



- **Y-axis**
  With 2 milled pockets.
  By means of sleeves you can easily screw on the fixture of the magnetic tape fastener

Z column and X axis
- Prepared groove of a width of 9 mm for subsequent assembly of the magnetic tapes by simply gluing them.

Universal precision drilling-milling machine with shift gearbox and 12 speeds

- Heavy, solid cast iron construction
- Adjustable V-ledges
- Very wide speed range from 95 - 3'200 rpm
- Two-stage motor
- Very smooth running due to ground oil-quenched gear wheels
- Right-/left handed rotation
- Dovetail slideway
- Gear head slewable by 60°
- Emergency stop pushbutton
- Solid grey cast iron pedestal provides for stability and absorbs vibrations

Model	Opti F 40 E
Item No	333 8440
€ plus VAT	**2'390.00**
Features	
Electrical connection	
Motor	1.1/1.5 kW 400 V ~50 Hz
Drilling capacity	
Drilling capacity in steel (St. 37)	Ø 32 mm
Continuous drilling capacity steel	Ø 28 mm
Spindle mount	
Spindle mount	MT 3
Milling head diameter max.	Ø 63 mm
End mill diameter max.	Ø 28 mm
Spindle stroke	120 mm
Throat	265 mm
Drill-milling head	
Swivel range	± 60°
Travel Z axis	480 mm
Gear stages	2 x 6 steps
Spindle speed	95 - 3'200 rpm
Cross table	
Table length	750 mm
Table width	210 mm
Travel Y axis	200 mm
Travel X axis	450 mm
T-slot size /distance	12 mm/ 63 mm
Dimensions	
Length	1'120 mm
Width	800 mm
Height	1'350 mm
Total weight	350 kg
Scope of delivery	Operating tool

Accessories	Item No	€ plus VAT
· Hydraulic machine vice HMS 125	335 5127	**439.00**
· Parallel spacer kit, 18 pcs.	335 4000	**169.00**
· Parallel spacer kit, 20 pcs.	335 4001	**95.00**
· Universal coolant equipment 400 V	335 2001	**189.00**
· Height-adjustable tailstock RST 1	335 6155	**89.00**
· Horizontal-vertical circular dividing table RT150	335 6150	**219.00**
· Collet kit MT 3/M12	335 2050	**189.00**
· Collet kit MT 3/M12, 6-pcs.	335 2014	**89.00**
· End mill cutter kit HSS 20 pcs. 10 milling cutters DIN 327 D Model with 2 cutting edges and 10 milling cutters DIN 844 B Model with 4 cutting edges	338 6200	**105.00**

· Precision machine vice FMSN 125 Pull-down mechanism with rotary table Hardened and ground jaws	335 4120	**249.00**

· Clamping tool kit SPW 10 Metric threads	335 2016	**75.00**

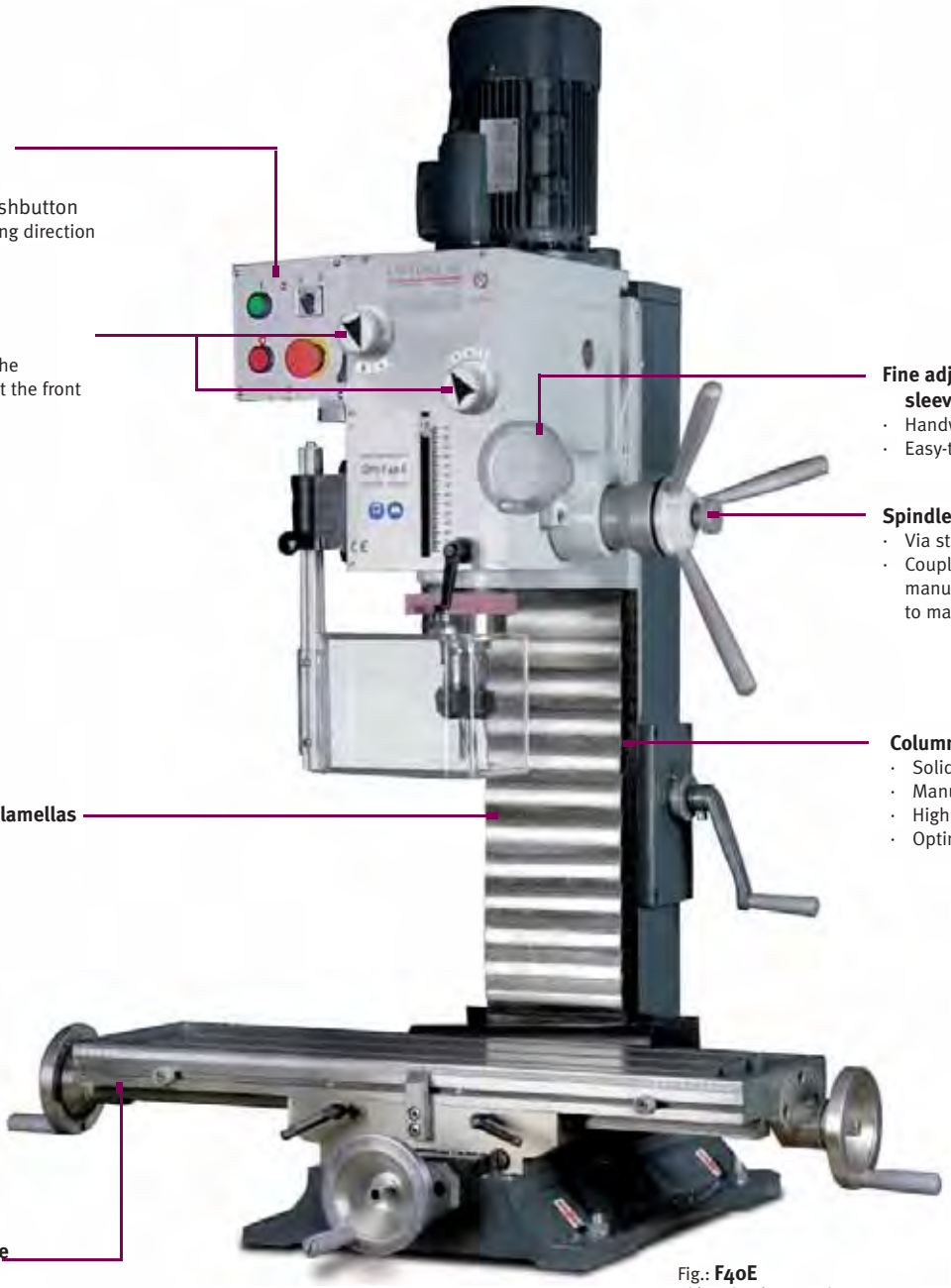
· Cutter head for copy and surface milling MT 3 Universal inserts to treat all steel and NE metals	335 0213	**209.00**

· Universal table feed Opti V99 With infinitely variable speed adjustment Rapid traverse	335 2020	**459.00**

· Assembly kit table feed V 99	335 2026	**69.00**

Control panel
- Easy-to-operate
- Emergency-stop pushbutton
- Selector switch rotating direction

Speed change
- Simply by actuating the gear selector switch at the front



Fine adjustment of spindle sleeve
- Handwheel
- Easy-to-operate

Spindle sleeve feed
- Via star grip (drilling)
- Coupler to change from manual rough feed to manual fine feed

Column
- Solid dovetail guideway
- Manually scraped
- Highest stability
- Optimum precision

Protection cover with lamellas
- Z column
- Stainless steel

Length measurement scale
- Embedded in the cross table

Fig.: **F40E**
with optional accessories

Optional accessory:
Steel base frame
- Figure with switch combination of the optional universal coolant equipment
- Chip plates
- Dimensions L x W x H: 940 x 647 x 780 mm
  Item No 335 3004
  € 489.00 plus VAT

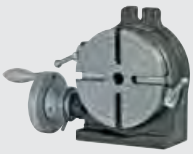
Universal coolant equipment
- Tank size LxWxH: 370 x 245 x 170 mm
  Item No 335 2001
  € 189.00 plus VAT

Precision drilling-milling machine with electronic speed variable drive and digital spindle sleeve display

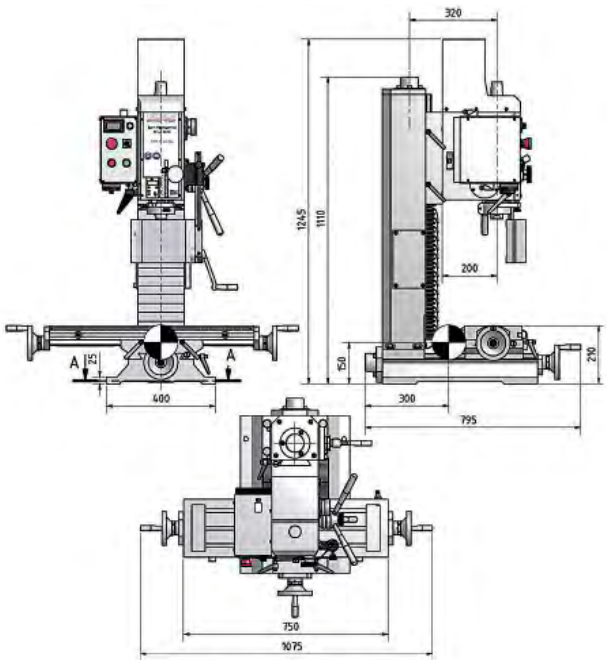
- Solid dovetail guideway of the gearhead provides for highest stability and optimum precision
- Solid, precise cross table, largely dimensioned and precisely machined surface
- Heavy, solid cast iron construction
- Adjustable v-ledges
- Very wide speed range
- Infinitely variable drive
- CNC prepared (special spindle bearing of the axes and assembly options of the Y-axis housing from the rear side)
- High true running accuracy due to taper roller bearings, better than 0.015 mm measured in the spindle sleeve
- Gearhead slewable by ±90°
- Digital depth gauge, accuracy of the display 0.01 mm, reversible mm/inch
- Drill depth stop
- Stainless steel protection with lamellas for the Z column
- Digital speed display
- Threading mode
- Automatic mode

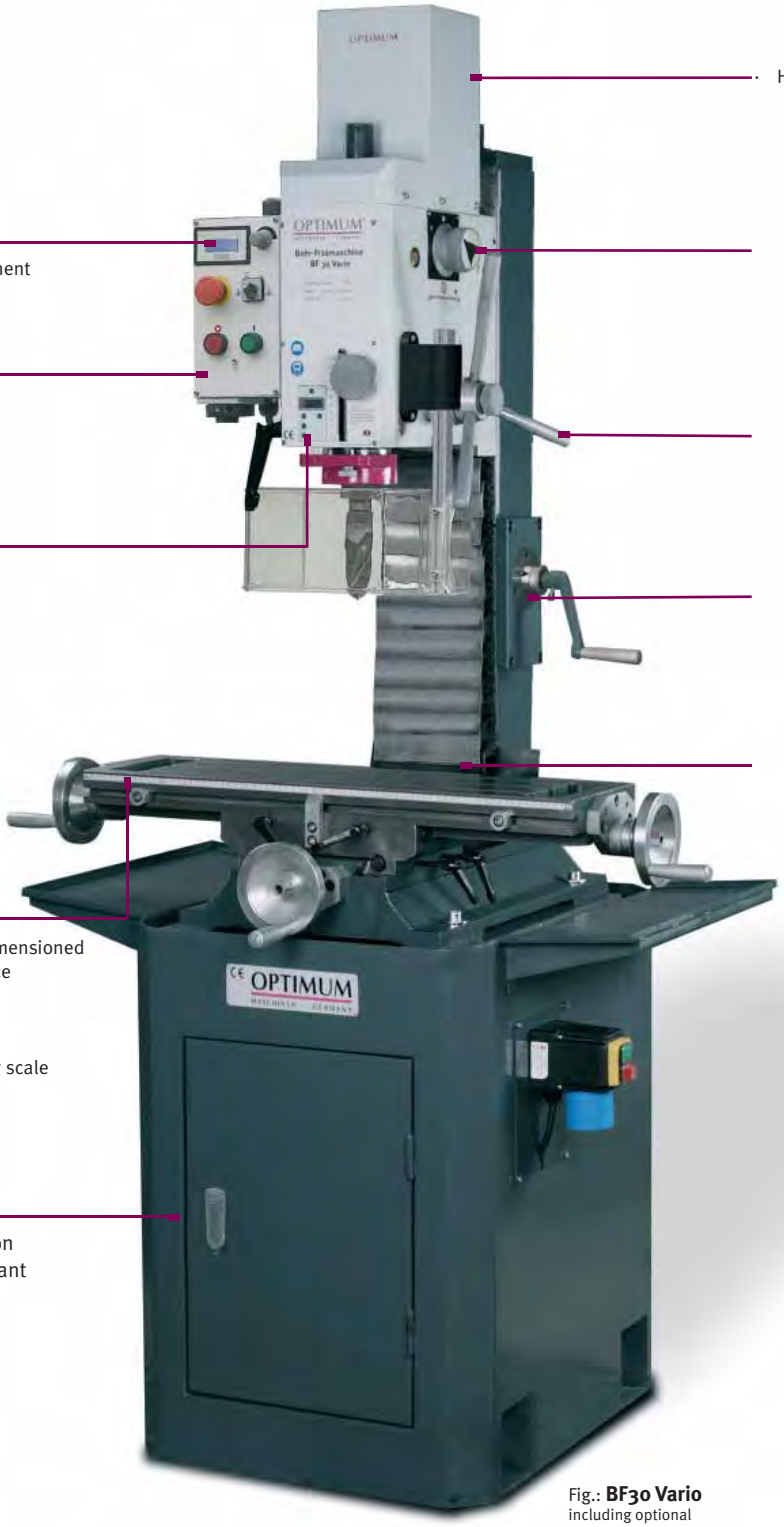
Model	**OPTI BF 30 Vario**
Item No with **MT 3 seat**	333 8430
Item No with **ISO 30 seat**	333 8431
€ plus VAT	**2'990.00**
Features	
Electrical connection	
Motor	2.2 kW / 230 V ~50 Hz
Drilling capacity	
Drilling capacity in steel (St. 37)	Ø 24 mm
Continuous drilling capacity steel	Ø 20 mm
Spindle mount	
Spindle mount	MT 3 or ISO 30
Milling head diameter max.	Ø 75 mm
End mill cutter diameter max.	Ø 30 mm
Spindle stroke	90 mm
Throat	220 mm
Spindle sleeve diameter	70 mm
Draw-in rod	M12
Drill-milling head	
Swivel range	± 90°
Travel Z axis	430 mm
Gear stages Vario	3 steps, speed variable
Spindle speed low	80 - 1'100 rpm
Spindle speed average	160 - 1'700 rpm
Spindle speed fast	320 - 3'100 rpm
Cross table	
Cross table length x width	750 x 210 mm
Travel X-axis	450 mm
Travel Y-axis	200 mm
Distance spindle - cross table	470 mm
T-slot size / Distance	12 mm / 63 mm / number 3
Dimensions	
Length x Width x Height	1'075 x 795 x 1'245 mm
Total weight	265 kg
Scope of delivery:	Draw-in rod M 12 Operating tool

Accessories	Item No	**€ plus VAT**
· Hydraulic machine vice HMS 125	335 5127	**439.00**
· Precision machine vice FMS 125	335 4125	**149.00**
· Parallel spacer kit 18 pcs.	335 4000	**169.00**
· Universal coolant equipment 230 V	335 2002	**189.00**
· Clamping tool kit SPW 10	335 2016	**75.00**
· Vib. absorber machine stand SE1	338 1012	**22.00**
· End mill cutter kit HSS 20 pcs.	338 6200	**105.00**
· Collet **ISO 30; ER25**	335 2046	**119.00**
· Collet kit 15-pcs. **ER25**	344 1109	**149.00**
· Collet kit 8-pcs. **MT 3**	335 2050	**189.00**
· Collet kit 6-pcs. **MT 3**	335 2014	**89.00**
· Universal table feed Opti V99 With infinitely variable speed adjustment Rapid traverse	335 2020	**495.00**
· Assembly kit table feed V 99	335 2026	**69.00**
· Horizontal-vertical circular dividing table RT150 Screw hardened and ground gear ratio 90 : 1 Scaling on the handwheel 2`	335 6150	**219.00**
· Cutter head copy and surface milling MT3	335 0213	**209.00**
· Cutter head copy and surface milling ISO 30	335 0215	**249.00**
· Precision bore head MT3	335 2083	**229.00**
· Precision bore head ISO30	335 2085	**239.00**



Dimensions





· High-performance **Vario** drive

Spindle speeds
- Infinitely variable speed adjustment
- Speeds from 80 up to 3'100 rpm

Gear
- Three-step

Control panel
- Digital speed display
- Potentiometer
- Emergency-stop pushbutton
- Selector switch operating mode/direction of rotation

Spindle sleeve feed
- Via star grip (drilling)
- Coupler to change from manual rough feed to manual fine feed

Digital depth gauge
- Accuracy of the display 0.01 mm
- Reversible mm/inch

Column
- Solid dovetail guideway
- Highest stability
- Optimum precision

Protection cover with lamella
- Z column
- Stainless steel

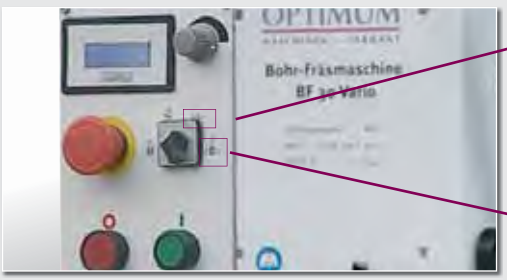
Cross table
- Compact, precise and largely dimensioned
- Precisely machined at the surface
- With T-slots
- Adjustable V-ledges
- Adjustable via 3 handwheels
- Included longitudinal measuring scale
- Adjustable limit stops

Optional steel base frame
- Figure with switch combination of the optional universal coolant equipment
  (not included in the delivery)
- Chip drip plates
- Dimensions L x W x H:
  940 x 647 x 780 mm

Item No 335 3004
€ 489.00 plus VAT

Fig.: **BF30 Vario**
including optional milling cutter and steel base frame

Fig.: **BF30 Vario CNC**
Please find further information from page 132 on



Operating mode "Auto"

auto

· In the automatic mode the motor is starting up automatically after moving the lever and stops again in the initial position. In this way it is not necessary to press the push button Start and Stop for repeated drilling tasks.

Operating mode "Threading"

· The engine is being activated by moving the star grip downward. The turning direction is changed by pressing the end switch on the adjustable drilling depth stop

Universal precision drilling-milling machines for the demanding user. BF 46 TC additionally including Z-axis feed and pneumatic tool changer

- Heavy, solid cast iron construction
- Infinitely variable drive
- High true running accuracy due to taper roller bearings, better than 0.015 mm measured in the spindle sleeve
- Gear head slewable by ±90°
- Solid dovetail guideway of the gear head provides for highest stability and optimum precision
- Optional, solid, heavy steel base frame provides for stability
- Drill depth stop
- Threading mode
- Automatic mode
- BF46Vario - CNC prepared (special spindle bearing of the axes and assembly options of the Y-axis housing from the rear side)
- Price-efficient and stable in value

Model	**OPTI BF 46 Vario**
Item No	333 8453
€ plus VAT	**4'190.00**
Model	**OPTI BF 46TC**
Item No	333 8456
€ plus VAT	**5'290.00**
Features	
Electrical connection	
Motor	2.2 kW / 230 V ~50 Hz
Drilling capacity	
Drilling capacity in steel (St. 37)	Ø 28 mm
Continuous drilling cap. steel (St.37)	Ø 24 mm
Spindle mount	
Spindle mount	ISO 40 (DIN 2080, DIN 69871)
Milling head diameter max.	Ø 80 mm
End mill cutter diameter max.	Ø 32 mm
Spindle stroke	115 mm
Throat	260 mm
Draw-in rod	M16
Drill-milling head	
Swivel range	± 90°
Travel Z axis	541 mm
Gear stages Vario	3 steps, speed variable
Spindle speed low	115 - 600 rpm
Spindle speed average	270 - 1'400 rpm
Spindle speed fast	590 - 3'100 rpm
Cross table	
Cross table length x Width	850 x 240 mm
Travel X axis	500 mm
Travel Y axis	250 mm
Distance spindle - cross table	470 mm
T-slot size / Distance	18 mm / 80 mm / number 3
Central lubrication pump BF 46 TC	Conveying capacity 6.3 ml (per cycle)
Dimensions	
Length x Width x Height	1'210 x 950 x 1'520 mm
Total weight	480 kg
Scope of delivery:	Draw-in rod M 16
	Operating tool

Exchange: **Spindle MT 4** for change Item No: 900 0439 **€ plus VAT 150.00**

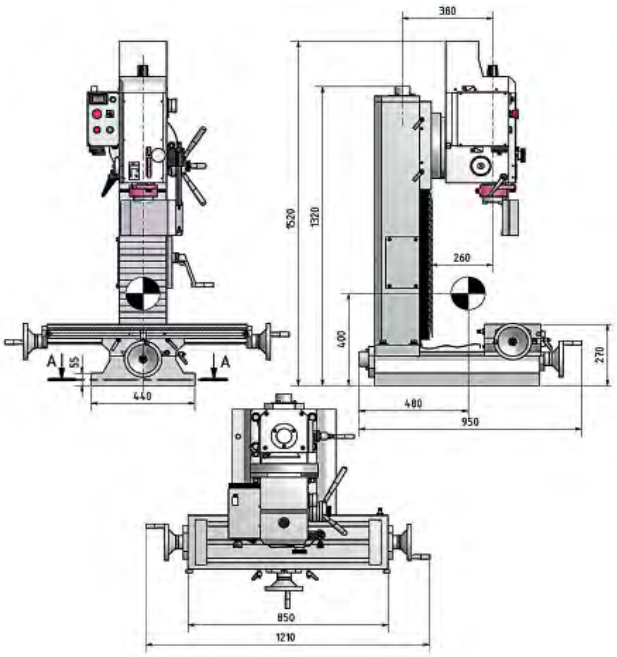
Accessories	Item No	**€ plus VAT**
· Hydraulic machine vice HMS 125	335 5127	**439.00**
· Precision machine vice FMS 125	335 4125	**149.00**
· Parallel spacer kit 18 pcs.	335 4000	**189.00**
· Parallel spacer kit 20 pcs.	335 4001	**99.00**
· Universal coolant equipment 230 V	335 2002	**189.00**
· Clamping tool kit SPW 16	335 2019	**99.00**
· Collet kit 18-pcs. ISO40	335 2056	**259.00**
· Vib. absorber machine stand SE1	338 1012	**22.00**
· End mill cutter kit HSS 20 pcs.	338 6200	**105.00**
· Universal table feed Opti V99 With infinitely variable speed adjustment Rapid traverse	335 2020	**495.00**

· Assembly kit table feed V 99	335 2027	**79.00**
· Horizontal-vertical circular dividing table RT200 Screw hardened and ground gear ratio 90 : 1 Scaling on the handwheel 2`	335 6200	**349.00**

· Arbor for drill chuck Outside cone ISO 40 Drill chuck cone B16	335 2070	**59.00**

· Arbor for milling cutter Outside cone ISO 40 Seat of milling cutter Ø 22 mm	335 2071	**55.00**

Dimensions BF 46 Vario



New
in the product range
BF 46 TC

BF 46 Vario

BF 46 TC including pneumatic tool changer
- Short replacement times by one-hand operation
- Low weight due to optimised structure
- Safe locking due to toggle principle
- Precise guidance due to optimised geometry
- Lowest air consumption

Spindle speeds
- Infinitely variable speed adjustment
- Spindle speeds from 115 up to 3'100 rpm

Control panel
- Digital speed display
- Emergency-stop push button
- Selector switch operating mode/direction of rotation
- Potentiometer
- Z-axis infeed (BF 46 TC)

Depth gauge
- Digital
- Accuracy of the display 0.01 mm
- Reversible mm/inch

BF 46 TC including Z-axis infeed
- Motor feed Z axis

Cross table
- Compact, precise and largely dimensioned
- Precisely machined at the surface
- T-slots
- Adjustable V-ledges
- Adjustable via 3 handwheels
- Included length measurement scale
- Adjustable limit stops

Spindle sleeve feed
- Via star grip (drilling)
- Coupler to change from manual rough feed to manual fine feed
- Handwheel for spindle sleeve fine feed

Column
- Solid dovetail guideway
- Highest stability and optimum precision

Central lubricating
- For spindle, screw nut and guideways

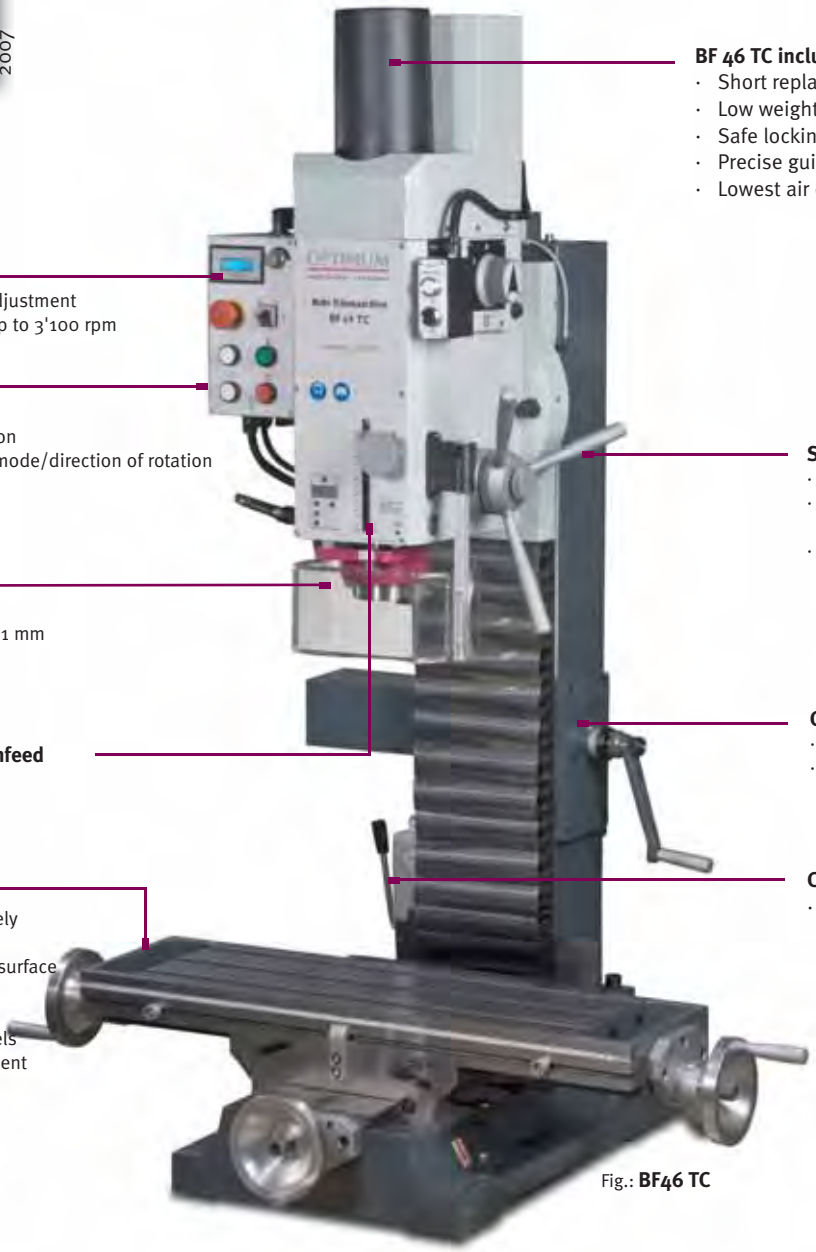


Fig.: **BF46 TC**

BF46 Vario CNC
Please find further information from page 134 on

Operating mode "Auto"

auto

· In the automatic mode the motor is starting up automatically after moving the lever and stops again in the initial position. In this way it is not necessary to press the pushbutton Start and Stop for repeated drilling tasks.

Operating mode "Threading"

· The engine is being activated by moving the star grip downward. The turning direction is changed by pressing the end switch on the adjustable drilling depth stop

Optional steel base frame
- Figure with switch combination of the optional universal coolant equipment
  (not included in the delivery)
- Dimensions L x W x H:
  1'234 x 750 x 884 mm
- Weight: 130 kg

Item No 335 3005
€ 779.00 plus VAT

Fig.: **Opti BF 46 Vario** including optional collet holder, milling tool, machine vice and base frame

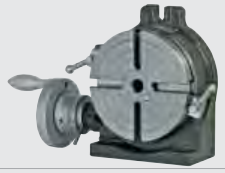
Versatile usable toolmaker milling machine for horizontal and vertical working

- Versatile applications
- Front milling and surface milling
- Plane milling and shell end milling
- Gear machining in the indexing method
- T-groove and slot milling
- All guideways hardened
- Very high cutting capacity
- Adjustable stops on all axes

Model	OPTI WF 20 Vario
Item No	333 8620
€ plus VAT	**3'990.00**
Features	
Electrical connection	
Motor	1.5 kW 230 V ~50 Hz
Drilling capacity	
Drilling capacity in steel (St. 37)	Ø 25 mm
Continuous drilling capacity steel	Ø 20 mm
Spindle mount	
Spindle mount	ISO 30 (DIN 2080)
Milling head diameter max.	Ø 63 mm
End mill cutter diameter max.	Ø 20 mm
Spindle stroke	53 mm
Draw-in rod	M12
Drill-milling head	
Swivel range	± 30°
Travel Z axis	310 mm
Steady for horizontal milling	Ø 22, groove 6 x 2.5 mm
Gear stages Vario	3 steps, speed variable
Spindle speed low	100 - 1'250 rpm
Spindle speed average	200 - 2'500 rpm
Spindle speed fast	300 - 3'750 rpm
Cross table	
Table length x table width - vertical	430 x 150 mm
Vertical displacement area min.	240 mm
Table length x Table width - horizonta	485 x 150 mm
Horizontal displacement area	330 mm
Travel X-axis	290 mm
Travel Y-axis	175 mm
T-slot size / Distance	12 mm / 45 mm
Dimensions	
Length x Width x Height	750 x 635 x 1'790 mm
Total weight	270 kg
Scope of delivery	Table vertical 150 x 430 mm
	Table horizontal 150 x 485 mm
	Steady for horizontal milling position
	incl. holder for side milling cutter
	Adjustable slide bearing
	Coolant equipment
	Machine base
	Operating tool

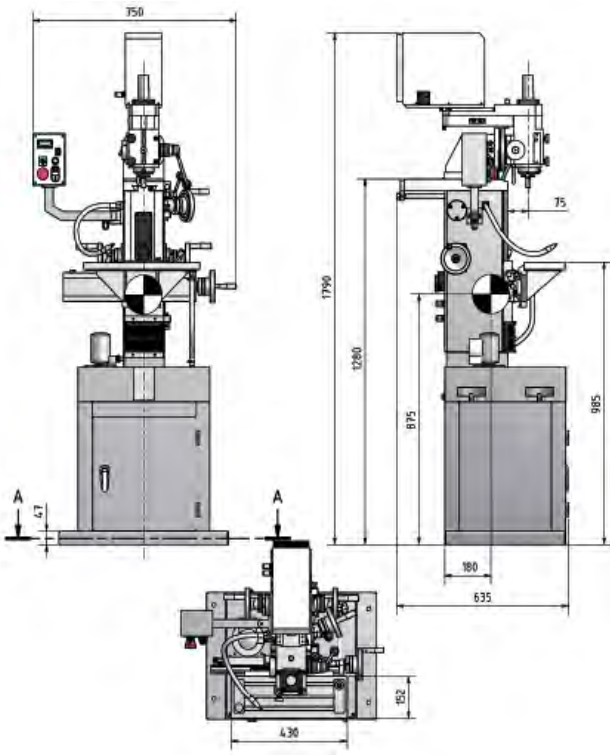
Accessories	Item No	€ plus VAT
· Hydraulic machine vice HMS 100	335 5100	**409.00**
· Precision machine vice FMS 100	335 4100	**129.00**
· Parallel spacer kit 18 pcs.	335 4000	**169.00**
· Parallel spacer kit 20 pcs.	335 4001	**95.00**
· Clamping tool kit SPW 10	335 2016	**75.00**
· Collet ISO 30; ER25	335 2046	**119.00**
· Collet kit 15-pcs. ER25	344 1109	**149.00**
· Vib. absorber machine stand SE1	338 1012	**22.00**
· End mill cutter kit HSS 20 pcs.	338 6200	**105.00**
10 milling cutters short type DIN 327D Model with 2 cutting edges 10 milling cutters short type DIN 844 B Model with 4 cutting edges		

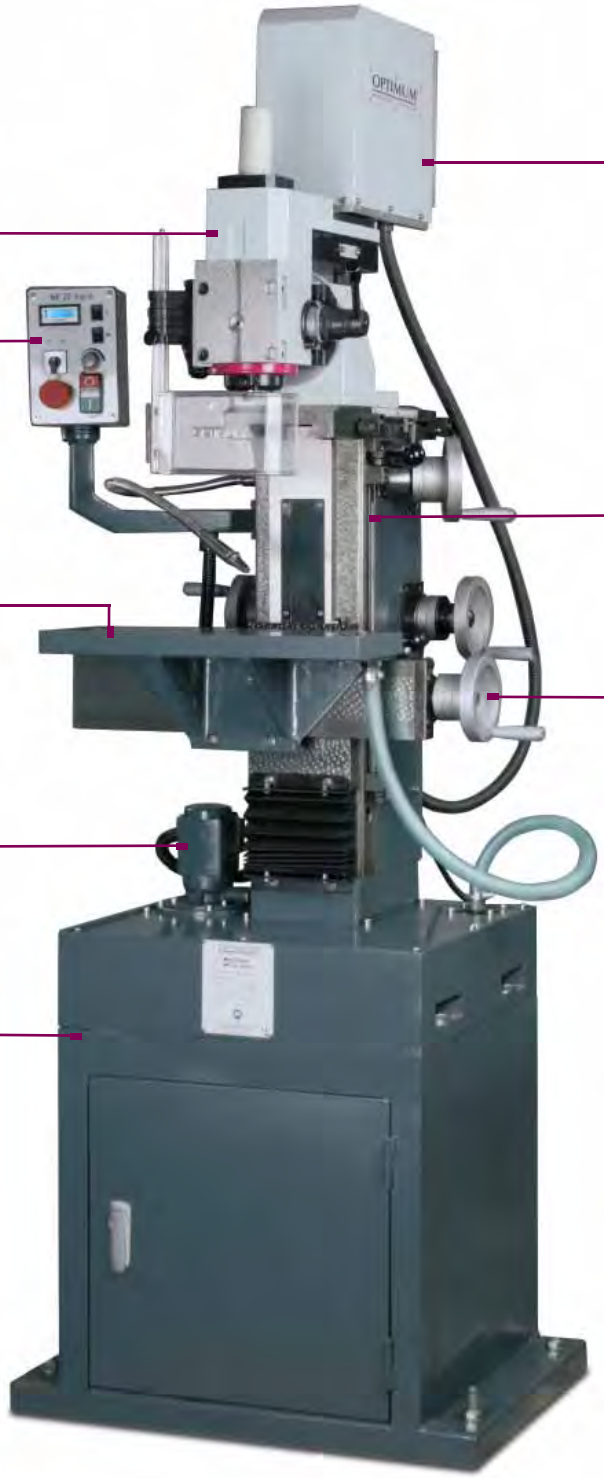
· Horizontal-vertical circular dividing table RT100	335 6110	**215.00**
· Horizontal-vertical circular dividing table RT150 Screw hardened and ground gear ratio 90 : 1 Scaling on the handwheel 2`	335 6150	**219.00**



· Screwing chuck M5 - M12 Built-in quick return incl. holder B 16 Slipping clutch 4-stage adjustable	335 2042	**329.00**

Dimensions





Inclination
- Milling head can be inclined in both directions by 30°

Control panel
- Slewable and largely dimensioned
- Rotational direction switch with position off
- Potentiometer for speed setting
- Digital speed display
- Emergency-stop pushbutton

Cross table
- Solid, exact and precisely machined surface
- With T-slots
- Vertical and horizontal table as standard

Coolant equipment
- as standard

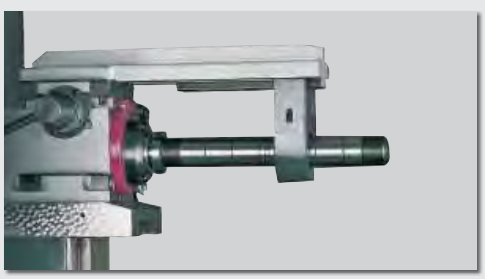
Base frame
- Solid
- Deposition shelf compartment

Spindle speeds
- Infinitely variable speed control with frequency-controlled industrial motor 100 - 3'750 rpm

Dovetail guideway
- Solid and precise
- Readjustable clearance

Measuring tape and scalings
- Clearly readable
- On all handwheels and in all directions of motion

Vertical position
- For works such as e.g. drilling, inclined drilling and for most milling tasks
- The milling unit is mounted on a cross slide by means of a turntable and a bracket



Horizontal position
- When working with side milling cutters in particular at large throat
- Including steady and shaft for side milling cutters
- The milling head is directly mounted on the cross slide

Multifunctional drilling-milling machines for professional use with infinitely variable speed control

- Heavy, compact model made of high-grade Meehanite casting
- All axes with adjustable dovetail guideway
- Right-/left handed rotation
- High true running accuracy due to taper roller bearings, less than 0.01 mm measured in the spindle sleeve
- Automatic spindle sleeve feed
- Main switch, right-/left-handed switch, emergency stop pushbutton
- Digital speed display
- Height adjustable safety screen including microswitch
- Central lubricating for spindle, screw nut and guideways
- Milling head slewable to the left and to the right by 90°
- Spindle head support slewable by ± 90°
- Manual spindle brake
- Including Digital Read Out DRO, digital 3-axes positioning display (X - Y - Z) to measure positions

Model	**Opti MF 1 Vario**
Item No	333 6015
€ plus VAT	**6'950.00**
Features	
Electrical connection	
Motor	2.2 kW 230 V ~50 Hz
Drilling capacity	
Drilling capacity in steel (St. 37)	Ø 30 mm
Continuous drilling capacity steel (St. 37)	Ø 21 mm
Spindle mount	
Spindle mount	SK 40
Milling head diameter max.	Ø 63 mm
End mill diameter max.	Ø 20 mm
Spindle stroke	127 mm
Drill-milling head	
Inclination of spindle head	± 90°
Range inclination spindle head support	± 180°
Travel Y axis spindle head support	330 mm
Speeds/Infeeds	
Gear stages Vario	6 steps, speed variable
Spindle speed	50 - 6'300 rpm
Automatic spindle sleeve feed	0.04/0.08/0.16 mm/rev
Cross table	
Table length x table width	915 x 200 mm
Load of cross table (max.)	160 kg
Travel Z axis	365 mm
Travel X axis	570 mm
Travel Y axis	210 mm
T-slot size	16 mm
T-slot distance	64 mm/number 3
Dimensions	
Length x width x height	1'350 x 1'300 x 2'010 mm
Total weight	930 kg
Scope of delivery	Chip tray
	Operating tool

Accessories	Item No	**€plus VAT**
· Clamping tool kit SPW 14	335 2018	**89.00**
· Horizontal-vertical circular dividing table RT 200	335 6200	**349.00**
· Morse taper-Taper mandrel ISO40	335 2070	**59.00**
· Arbor for milling cutter ISO 40/22 mm	335 2071	**55.00**
· Collet chuck ISO 40 including 18 collets	335 2056	**259.00**
· Vibration absorber machine stand SE 2	338 1016	**33.50**
· Universal table feed V 250 X- and Y-axis for self assembly; incl. assembly kit	335 2024	**529.00**

Digital Read Out DRO
- Compact digital 3-axes position display (X - Y - Z)
- Individually programmable
- Five-segment display of three lines

Spindle speeds
- Infinitely variable speed control with frequency convener
- Very wide speed range

Control panel
- Slewable
- Digital speed display
- Emergency-stop pushbutton
- Potentiometer

Y-axis
- Large throat from 132 to 410 mm

Drill depth stop
- Adjustable using the millimetre scale
- Readable at the front

Safety screen
- Height-adjustable
- Largely dimensioned

Central lubricating
- Cross table and Z axis

Cross table
- Solid, precise, largely dimensioned and precisely machined surface

Multifunctional drilling-milling machines for professional use. Infinitely variable speed control with frequency converter “Made in EU”

- Heavy, compact model made of high-grade Meehanite casting
- Solid rectangular guideways for Z-axis (OPTI MF 4 Vario)
- All axes with adjustable dovetail guideway
- Right-/left handed rotation
- High true running accuracy due to taper roller bearings, better than 0.01 mm measured in the spindle sleeve
- Automatic spindle sleeve feed
- Main switch with motor protection, right-/left-handed switch, emergency-stop push button
- Coolant equipment supplied as standard
- Price-efficient and stable in value
- DPA version incl. digital position display DPA 2000, Glass scales for three axes and assembly

Model	OPTI MF 2 Vario	OPTI MF 4 Vario
Item No	333 6020	333 6040
€ plus VAT	**9’400.00**	**12’400.00**
Model	**OPTI MF 2 Vario-DPA**	**OPTI MF 4 Vario-DPA**
Item No	333 6020DPA	333 6040DPA
€ plus VAT	**10’900.00**	**13’900.00**
Features		
Electrical connection		
Motor	1.5 kW 400 V ~50 Hz	3.5 kW 400 V ~50 Hz
Drilling capacity		
Drilling capacity in steel (St. 37)	Ø 24 mm	Ø 32 mm
Continuous drilling capacity steel	Ø 20 mm	Ø 28 mm
Spindle mount		
Spindle mount	ISO 40 (DIN 2080)	
Milling head diameter max.	Ø 76 mm	Ø 100 mm
End mill cutter diameter max.	Ø 18 mm	Ø 20 mm
Spindle stroke	127 mm	
Throat	213 - 533 mm	200 - 680 mm
Drill-milling head		
Inclination of spindle head	± 45°	
Gear stages Vario	6 steps	8 steps
	speed variable	
Spindle speed	10 - 5’100 rpm	9 - 6’750 rpm
Automatic spindle sleeve feed	0.04/0.08/0.15 mm/rev	
Cross table		
Table length x Table width	1244 x 230 mm	1370 x 254 mm
Load of cross table (max.)	230 kg	275 kg
Travel Y-axis manual	305 mm	400 mm
Travel X axis automatic	800 mm	
Travel Z axis	manual 406 mm	automatic
T-slot size /Distance	16 mm/63 mm/number 3	
Distance spindle - cross table	57 - 463 mm	40 - 446 mm
Dimensions		
Length	1’400 mm	1’500 mm
Width	1’450 mm	
Height	2’150 mm	2’200 mm
Total weight	950 kg	1’150 kg
Scope of delivery	Coolant equipment Chip tray Automatic table feed X-axis Automatic table feed Z-axis(MF4 Vario) Operating tool	

Accessories	Item No	€ plus VAT
· Hydraulic machine vice HMS 125	335 5150	**469.00**
· Precision machine vice FMS 150	335 4150	**199.00**
· Parallel spacer kit 18-pcs.	335 4000	**169.00**
· Parallel spacer kit 20-pcs.	335 4001	**95.00**
· Clamping tool kit SPW 14	335 2018	**89.00**
· Collet kit ISO40, ER 32, 18-pcs.	335 2056	**259.00**
· Vibration absorber SE1	338 1012	**22.00**
· End mill cutter kit HSS 20 pcs.	338 6200	**105.00**
· Universal table feed Opti V250	335 2025	**469.00**

With infinitely variable speed adjustment Y-axis
Rapid traverse, assembly kit

· Arbor for drill chuck Outside cone ISO 40 Drill chuck cone B16	335 2070	**59.00**

· Arbor for milling cutter Outside cone ISO 40 Seat of milling cutter Ø 22 mm	335 2071	**55.00**

· Tool clamping system ISO 40 Short change times One-hand operation High achievable vacuum	335 2394	**590.00**

Information on page 61

Spindle speeds
- Infinitely variable speed control
- Frequency converter made in EU
- Very wide speed range

Drill-milling head
- Inclinable by ± 45°
- Throat
  215 - 533 mm MF 2 Vario
  200 - 680 mm MF 4 Vario

Drill depth stop
- Adjustable
  using the millimetre scale
- Readable at the front

Screening grid
- Height-adjustable
- Largely dimensioned

Vertical setting range cross table
- 406 mm
  automatic for MF 4 Vario
  manual for MF 2 Vario

Control panel
- Slewable
- Largely dimensioned
- Clearly arranged

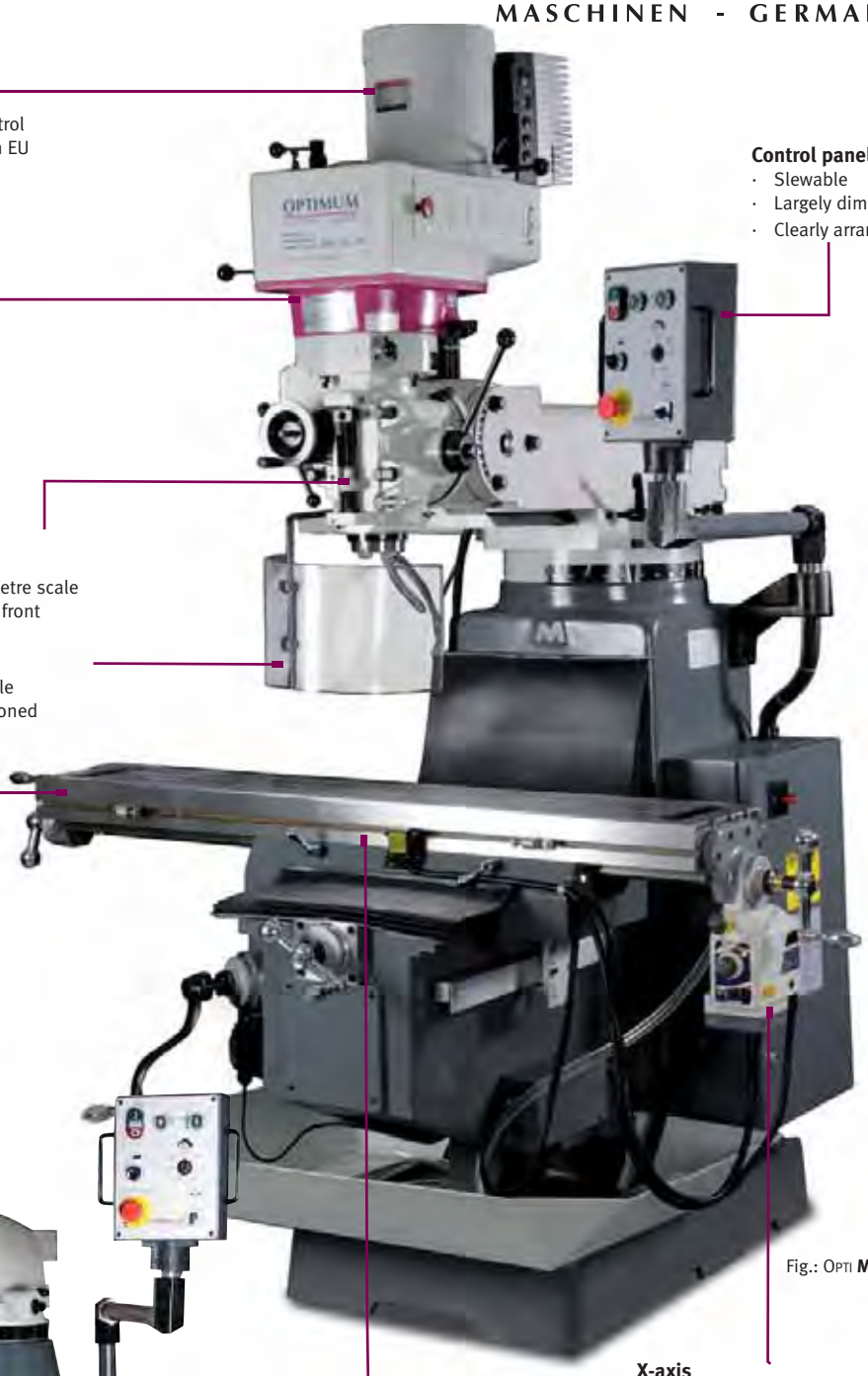


Fig.: Opti **MF 4 Vario**

Cross table
- Solid
- Precise
- Largely dimensioned
- Precisely machined at the surface
- Electrically height adjustable at rapid traverse (Opti MF 4 Vario)

X-axis
- Automatic table feed
  supplied as standard
- Infinitely variable speed control
- Rapid traverse
- Right-/left handed rotation

Fig.: Opti **MF 2 Vario**

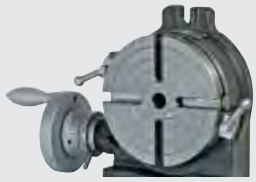
New
with electrical table height adjustment

Quality due to precision. The universal milling machine ensures high productivity

- Multi-purpose range of application
- Solid machine structure
- Heavy, compact model made of high-grade Meehanite casting
- All guideways hardened and adjustable via V-ledge
- Central lubricating
- Electrical table height adjustment
- Main switch with protective motor switch, right-/left-handed rotation, emergency-stop pushbutton
- Largely dimensioned handwheels with scale
- Machine lamp as standard
- Incl. digital position display DPA 2000, Glass scales for three axes incl. assembly
- Coolant equipment as standard
- Easy operating of the switch elements for changing the speed
- Serially with 9-step feed in the X- and Y-axis
- Rotatable control unit
- Dovetail guideway with adjustable V-ledges in all 3 axes
- Very smooth running due to ground oil-quenched gearwheels
- With automatic table feed in the X- and Y-axis as standard
- Cross table with precisely machined surface with T-slots

Model	**OPTI UF 100 - DPA**
Item No	333 6103DPA
€ plus VAT	**10'500.00**
Features	
Electrical connection	
Motor	2.2 kW 400 V ~50 Hz
Drilling capacity	
Drilling capacity in steel (St. 37)	Ø 20 mm
Continuous drilling capacity in steel (St.37)	Ø 18 mm
Spindle mount	
Spindle mount	ISO 40 (DIN 2080)
Milling head diameter max.	Ø 85 mm
End mill cutter diameter max.	Ø 16 mm
Shaft for side milling cutter	32 mm
Draw-in rod	M16
Drill-milling head	
Swivel range	360°
Rotation range	360°
Travel Y-axis spindle head support	630 mm
Distance spindle - vertical position cross table	90 - 520 mm
Gear stages	11 steps
Spindle speed	40 - 1'600 rpm
Cross table	
Table length x Width	1'120 x 260 mm
Travel Y-axis automatic	270 mm
Travel X-axis automatic	600 mm
Travel Z axis manual	430 mm
Table feed (9 steps)	24 - 402 mm/min
T-slot size / Distance / Number	14 mm / 63 mm / 3
Load capacity (max.)	350 kg
Dimensions	
Length x width x height	1'655 x 1'325 x 1'730 mm
Total weight	1'350 kg
Scope of delivery	Collet chuck ISO 40 with 8 collet chucks 4 - 16 mm
	Counter support for horizontal milling position
	with suport for side milling cutter
	Adjustable slide bearing
	Coolant equipment
	Coolant collection tray,
	Machine lamp
	Operating tool

Accessories	Item No	**€ plus VAT**
· Hydraulic machine vice FMSN	335 4130	**279.00**
· Parallel spacer kit 18 pcs.	335 4000	**169.00**
· Parallel spacer kit 20 pcs.	335 4001	**95.00**
· Vib. absorber machine stand SE2	338 1016	**33.50**
· End mill cutter kit HSS 20 pcs.	338 6200	**105.00**
· Horizontal-vertical circular dividing table RT200 Screw hardened and ground gear ratio 90 : 1 Scaling on the handwheel 2`	335 6200	**349.00**



· Arbor for drill chuck Outside cone ISO 40 Drill chuck cone B16	335 2070	**59.00**

· Arbor for milling cutter Outside cone ISO 40 Milling cutter support Ø 22 mm	335 2071	**55.00**

DPA 2000
· Digital position display

Milling head
· Two rotation axes
· Slewable and rotatable to any three-dimensional angle
· Scales

Coolant equipment
· Dosing valve and stop valve
· Variable hose of individual plastic elements

Screening grid
· Height-adjustable
· Largely dimensioned

Central lubricating
· of the cross table

Cross table
· Solid
· Precise
· Largely dimensioned
· Precisely machined at the surface
· T-slots
· Adjustable V-ledges

Control panel
· Spindle drive and drive of table feed
· Clearly arranged and slewable
· Easy-to-operate

Machine lamp
· Concentrated halogen light
· Anodized, semi-wide radiating round reflector

Table height
· Electrically adjustable

Safety handwheels
· Largely dimensioned
· Adjustable graduated collars

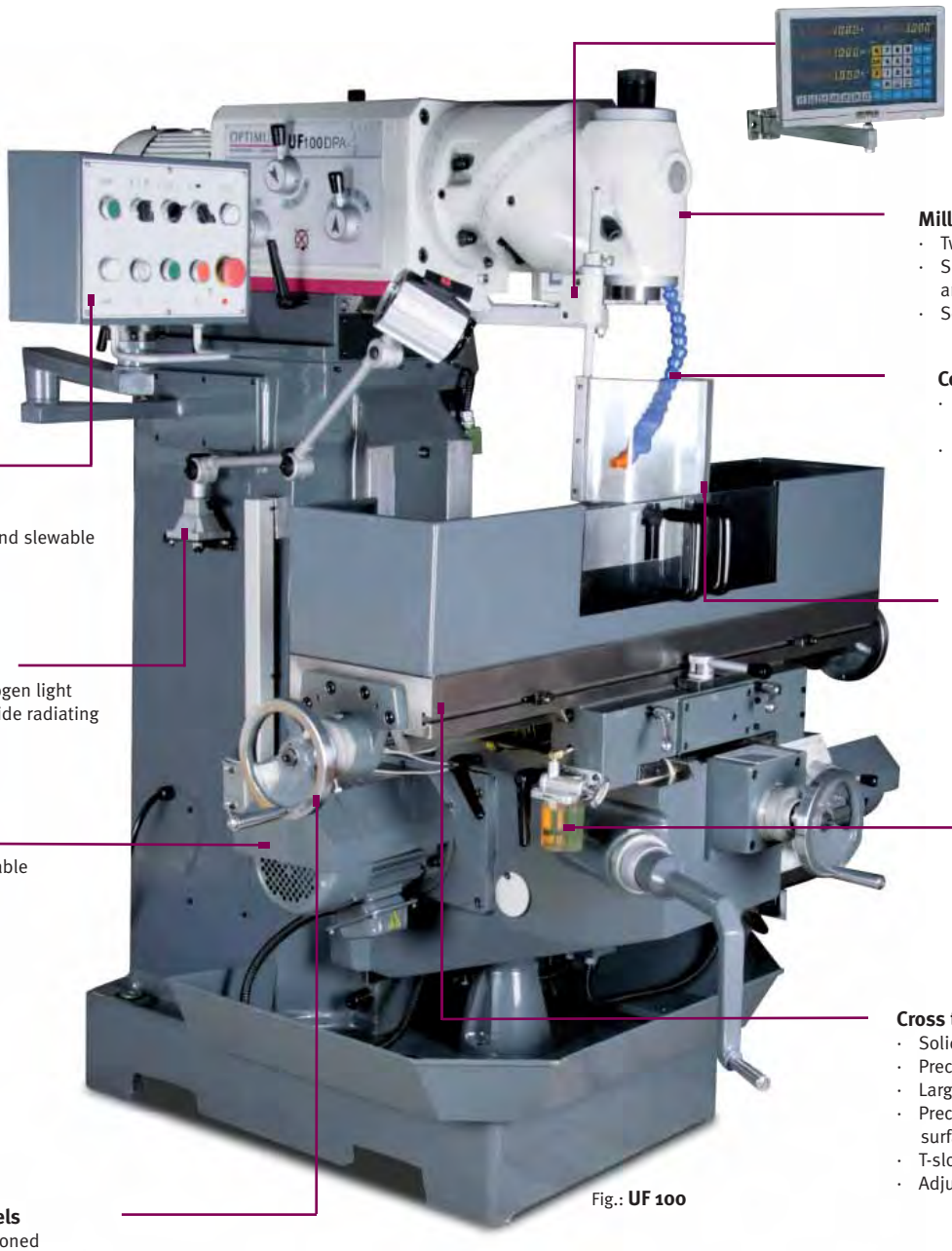


Fig.: **UF 100**

Horizontal milling position
· For operations in horizontal milling position with counter support and support for side milling cutters, adjustable slide bearing

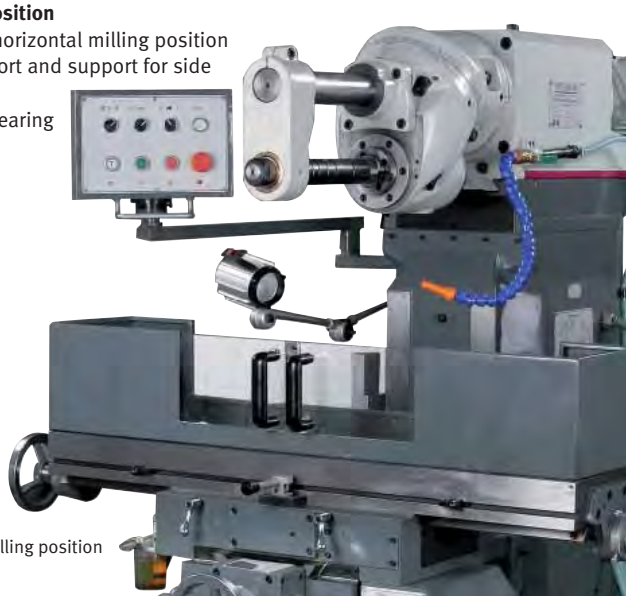


Fig.: **UF 100**
in horizontal milling position

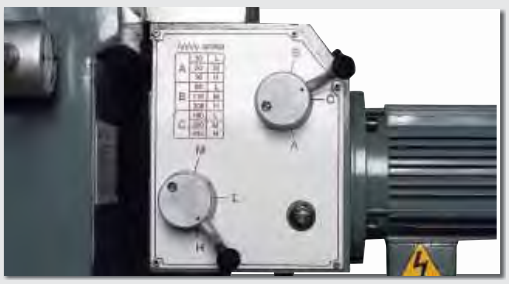
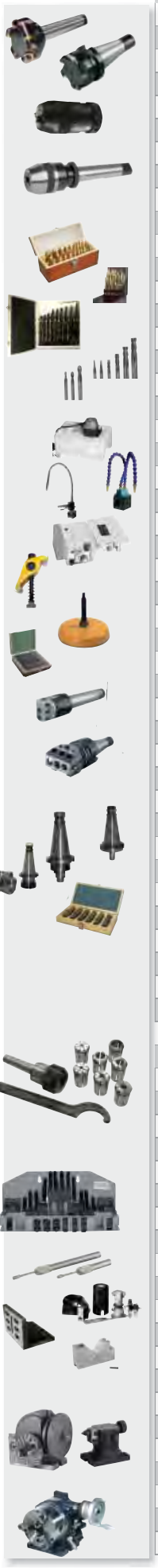


Table feed
· Motor with gear table feed X- and Y-axis 9 steps, 24 - 402 [mm/min]



Accessory	Item - No.	BF16	BF20	F40E	BF30 MT3	BF30 ISO30	BF46 ISO40	BF46 MT4	WF20	MF1	MF2	MF4	UF100
Cutter for copy and surface milling **MT 2**	335 0212	●	●	–	–	–	–	–	–	–	–	–	–
Cutter for copy and surface milling **MT 3**	335 0213	–	–	●	●	–	○	○	–	○	○	○	○
Cutter for copy and surface milling **ISO 30**	335 0215	–	–	–	–	●	–	–	●	–	–	–	–
Cutter for copy and surface milling **ISO 40**	335 0216	–	–	–	–	–	●	–	–	●	●	●	●
Quick-action drill chuck B16	S. s. 28	●	●	●	●	●	●	●	●	●	●	●	●
Röhm quick-action drill chuck B16	S. s. 28	●	●	●	●	●	●	●	●	●	●	●	●
Direct quick-action drill chuck **MT 2**	305 0571	●	●	○	○	○	–	–	○	–	–	–	–
Direct quick-action drill chuck **MT 3**	305 0573	–	–	●	●	–	○	○	●	○	○	○	○
Direct quick-action drill chuck **MT 4**	305 0574	–	–	–	–	–	○	●	–	○	–	–	–
Arbor for drill chuck **MT 2**	305 0670	●	●	–	–	–	–	–	–	–	–	–	–
End mill cutter kit HSS	335 2113	●	●	●	●	●	●	●	●	●	●	●	●
End mill cutter kit HSS	338 6200	●	●	●	●	●	●	●	●	●	●	●	●
Twist drill titan-coated	305 1010	●	●	●	●	●	●	●	●	●	●	●	●
Twist drill HSS **MT 2**	305 1002	–	–	–	–	–	○	○	–	○	○	○	○
Twist drill HSS **MT 3**	305 1003	–	–	●	●	–	○	○	–	○	○	○	○
Cutter kit hard metal	335 2118	●	●	●	●	●	●	●	●	●	●	●	●
Radius cutter kit	335 2116	●	●	●	●	●	●	●	●	●	●	●	●
Cutter holding arbor **MT 2**	335 2102	●	●	–	–	–	–	–	–	–	–	–	–
Coolant pump **230 V**	335 2002	●	●	●	●	●	○	○	●	○	○	○	○
Coolant pump **400 V**	335 2001	○	○	●	○	○	●	●	○	●	●	●	●
Coolant hose KMS2	335 6660	●	●	●	●	●	●	●	●	●	●	●	●
Cooling lubricant fogger MMC1	335 6663	●	●	●	●	●	●	●	●	●	●	●	●
Table feed **V 99**	335 2020	–	–	●	●	●	●	●	●	●	–	–	–
Table feed **V 250**	335 2024	–	–	–	–	–	–	–	–	–	●	●	–
Blank holder **14 mm**	335 2031	–	–	–	–	–	–	–	–	–	●	●	●
Blank holder **18 mm**	335 2032	–	–	–	–	–	●	●	–	●	–	–	–
Vibration absorber **SE1**	338 1012	●	●	●	●	●	●	●	●	●	–	–	–
Vibration absorber **SE2**	338 1016	–	–	–	–	–	●	●	–	●	●	●	●
Parallel spacer kit	335 4000-01	●	●	●	●	●	●	●	●	●	●	●	●
Bore head **MT 3**	335 2083	–	–	●	●	–	–	–	–	–	–	–	–
Bore head **MT 4**	335 2084	–	–	–	–	–	–	●	–	–	–	–	–
Precision bore head **ISO30**	335 2085	–	–	–	–	●	–	–	●	–	–	–	–
Precision bore head **ISO40**	335 2086	–	–	–	–	–	●	–	–	●	–	–	–
Bore head **MT 3**	335 2073	–	–	●	●	–	–	–	–	–	–	–	–
Precision bore head **ISO40**	335 2074	–	–	–	–	–	●	–	–	●	●	●	●
Arbor for milling cutter **ISO 40**	335 2071	–	–	–	–	–	●	–	–	●	●	●	●
Arbor for drill chuck **MT2**	305 0670	●	●	–	–	–	–	–	–	–	–	–	–
Arbor for drill chuck **MT4**	335 0304	–	–	–	–	–	–	●	–	–	–	–	–
Arbor for drill chuck **ISO 30**	335 2069	–	–	–	–	●	–	–	●	–	–	–	–
Morse taper taper mandrel **ISO 40**	335 2070	–	–	–	–	–	●	–	–	●	●	●	●
Collet chuck **ISO 30**	335 2046	●	–	–	–	–	–	●	–	–	–	–	–
Collet chuck **ISO 40**	335 2056	–	–	–	–	–	●	–	–	●	●	●	●
Collets **ER 25**	344 1109	–	●	–	–	–	–	–	–	–	–	–	–
Collets **ER 32**	344 1122	–	●	●	–	–	●	●	–	●	●	●	●
Collet chuck **MT 2/ER25**	335 2052	●	●	–	–	–	–	–	–	–	–	–	–
Collet chuck **MT 2/ER32**	335 2053	●	●	–	–	–	–	–	–	–	–	–	–
Collet chuck **MT 3/M12**	335 2050	–	–	–	●	–	○	○	–	○	–	–	–
Collet chuck **MT 4/M16**	335 2051	–	–	–	–	–	–	●	–	–	–	–	–
Collet kit **MT 2 direct**	335 1980	●	●	–	–	–	–	–	–	–	–	–	–
Collet kit **MT 3 direct**	335 2014	–	–	●	●	–	–	–	–	–	–	–	–
Clamping tool **SPW 8**	335 2015	●	–	–	–	–	–	–	–	–	–	–	–
Clamping tool **SPW 10**	335 2016	–	●	–	●	●	–	–	●	–	–	–	–
Clamping tool **SPW 12**	335 2017	–	–	–	–	–	–	–	–	–	–	–	●
Clamping tool **SPW 14**	335 2018	–	–	●	–	–	–	–	–	–	●	●	–
Clamping tool **SPW 16**	335 2019	–	–	–	–	–	●	●	–	●	–	–	–
Tool clamping system **ISO 40**	335 2394	–	–	–	–	–	●/–	●/–	–	●	●	●	–
Bracket 90°	338 5052	–	–	●	●	●	●	●	●	●	●	●	●
Prism angle WP30	335 2195	●	●	●	●	●	●	●	●	●	●	●	●
Threading attachment M5 - M12	335 2042	●	●	●	●	●	●	●	●	●	●	●	●
Universal dividing head TA 125	335 6125	●	●	●	●	●	●	●	●	●	●	●	●
Tailstock **Rst 1**	335 6155	●	●	●	●	●	●	●	●	●	●	●	●
Tailstock **Rst 2**	335 6157	–	–	●	●	●	●	●	●	●	●	●	●
Circular dividing table **RT 100**	335 6110	●	●	●	●	●	●	●	●	●	●	●	●
Circular dividing table **RT 150**	335 6150	●	●	●	●	●	●	●	●	●	●	●	●
Circular dividing table **RT 200**	335 6200	–	–	●	●	●	●	●	●	●	●	●	●
Circular dividing table **RTE 165**	335 6365	–	●	●	●	●	●	●	●	●	●	●	●
Circular dividing table **RTU 165**	335 4165	–	–	●	●	●	●	●	●	●	●	●	●

Milling machine vices

		BF 16 Vario	BF20(L)Vario	F40 E	BF30 Vario	BF46 Vario	WF 20 Vario	MF1 Vario	MF2 Vario	MF 4 Vario	UF 100
Precision machine vice											
FMS 100	335 4100	●	●	○	○	○	●	○	○	○	○
FMS 125	335 4125	–	○	●	●	●	○	○	○	○	○
FMS 150	335 4150	–	–	○	○	●	–	●	●	●	●
FMS 200	335 4200	–	–	–	–	–	–	○	○	○	○
FMSN 100	335 4110	●	●	○	○	○	●	○	○	○	○
FMSN 125	335 4120	–	–	●	●	●	○	●	●	●	●
FMSN 150	335 4130	–	–	○	○	●	–	●	●	●	●
Hydraulic machine vice											
HMS 100	335 5100	●	●	●	●	○	●	○	○	○	○
HMS 125	335 5127	–	●	●	●	●	○	○	○	○	○
HMS 150	335 5150	–	–	○	○	●	–	●	●	●	●
HMS 200	335 5200	–	–	–	–	–	–	○	○	○	○
Triaxial vice											
DAS 100	335 5500	–	–	○	○	●	○	○	○	○	○
MV3-75	335 4175	○	–	○	○	○	●	○	○	○	○
MV3-125	335 4178	–	–	○	○	○	○	●	●	●	●
Two-axis vice											
ZAS 50	335 4170	○	○	●	●	●	●	○	○	○	○
Hydraulic machine vice											
HCV 105	353 6210	–	–	–	–	○	–	●	●	●	–
HCV 125	353 6214	–	–	–	–	●	–	–	–	–	–
Precision modular vice											
PNM 100	335 5551	–	○	○	○	○	○	○	○	○	○
PNM 125	335 5553	–	–	●	●	●	○	●	●	●	●

● Recommended ○ Partly recommended – Not recommended

Fig.: ZAS

Fig.: FMSN

Fig.: HCV 105

Fig.: HMS

Fig.: DAS

Fig.: HCV 125

Fig.: MV3

Fig.: FMS

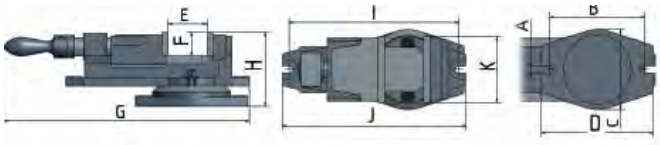
Fig.: PNM

OPTIMUM precision machine vices FMS

- Solid structure for milling, drilling and grinding
- Vice body made of high quality casting
- Hardened and ground guide surfaces
- Hardened and ground clamping jaws, replaceable
- With rotary table, rotatable by 360°

FMS 100	335 4100	**129.00**
Prism jaw for FMS 100	335 4102	**29.00**
FMS 125	335 4125	**149.00**
Prism jaw for FMS 125	335 4127	**39.00**
FMS 150	335 4150	**199.00**
Prism jaw for FMS 150	335 4152	**39.00**
FMS 200	335 4200	**329.00**
Prism jaw for FMS 200	335 4202	**59.00**

Technical data		A	B	C	D	E	F	G	H	I	J	K	kg
FMS 100	mm	13	150	124	178	62	30	395	100	270	292	100	11
FMS 125	mm	13	176	148	210	85	37	370	128	332	365	125	17
FMS 150	mm	13	210	180	258	114	40	462	145	400	445	150	28
FMS 200	mm	16.5	295	237	355	150	58	620	202	530	580	200	58



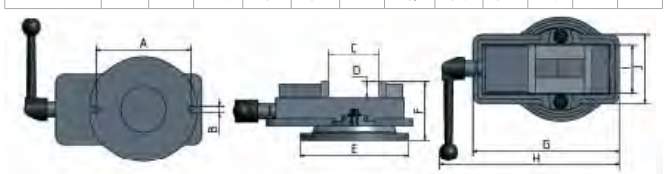
Prism jaw

OPTIMUM precision machine vices FMSN

- Low-pull type mechanism for safe clamping of the workpiece
- Vice body made of high quality casting
- Hardened and ground guide surfaces
- Hardened and ground clamping jaws, replaceable
- Protected spindle
- Also used for expansion clamping by relocating the clamping jaws
- With rotary table, rotatable by 360°

FMSN 100	335 4110	**219.00**
Prism jaw for FMSN 100	335 4112	**39.00**
FMSN 125	335 4120	**249.00**
Prism jaw for FMSN 125	335 4122	**45.00**
FMSN 150	335 4130	**279.00**
Prism jaw for FMSN 150	335 4132	**49.00**

Technical data		A	B	C	D	E	F	G	H	I	J	kg
FMSN 100	mm	210	14,5	101	36	240	119	325	319	100	154	19
FMSN 125	mm	248	16,5	108	36	278	128	355	369	135	185	29
FMSN 150	mm	288	18.5	146	46	332	149	415	425	155	210	36



Prism jaw

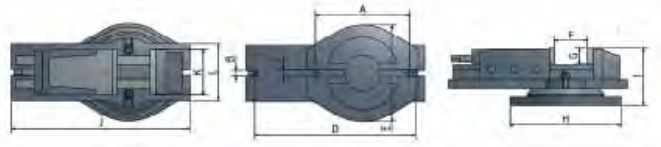
OPTIMUM hydraulic machine vices HMS

- Solid structure for milling, drilling and grinding
- Vice body made of high quality casting
- Hardened and ground guide surfaces
- Hardened and ground clamping jaws, replaceable
- Booster system, little effort, high pressure output when clamping
- Protected spindle
- Wide clamping range due to locking bolt with various pitches
- With rotary table, rotatable by 360°

HMS 100	335 5100	**409.00**
Prism jaw for HMS 100	335 5102	**39.00**
HMS 125	335 5127	**439.00**
Prism jaw for HMS 125	335 5129	**45.00**
HMS 150	335 5150	**469.00**
Prism jaw for HMS 150	335 5152	**49.00**
HMS 200	335 5200	**869.00**

		A	B	C	D	E	G	H	I	J	K	L	kg
HMS 100	mm	230	15	15	390	240	36	270	122	525	100	118	26
HMS 125	mm	254	16	18	500	265	46	290	151	670	127	130	52
HMS 150	mm	298	17	17	580	303	51	328	169	800	150	180	74

	Span	Span	Span	Clamping pressure	Clamping pressure
HMS 100	0-60 mm	57-115 mm	110-170 mm	2'500 kg	24.5 kN
HMS 125	0-76 mm	72-150 mm	146-224 mm	4'000 kg	39.25 kN
HMS 150	0-100 mm	98-200 mm	195-300 mm	4'500 kg	44.1 kN
HMS 200	0-100 mm	98-200 mm	195-300 mm	7'500 kg	73.6 kN

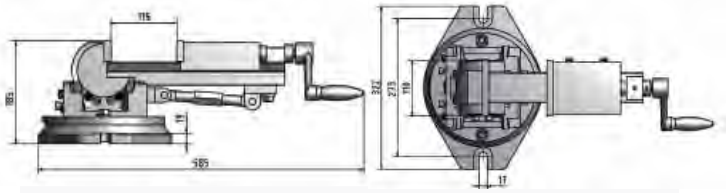


Prism jaw

OPTIMUM triaxial vice DAS 100

- High quality casting · With rotary table, rotatable by 360°
- Hardened and ground guide surfaces
- Hardened and ground clamping jaws, replaceable
- Horizontal slewing movement up to 90°
- Vertical slewing movement up to ± 45° via threaded spindle
- Well-readable scales for all three axes

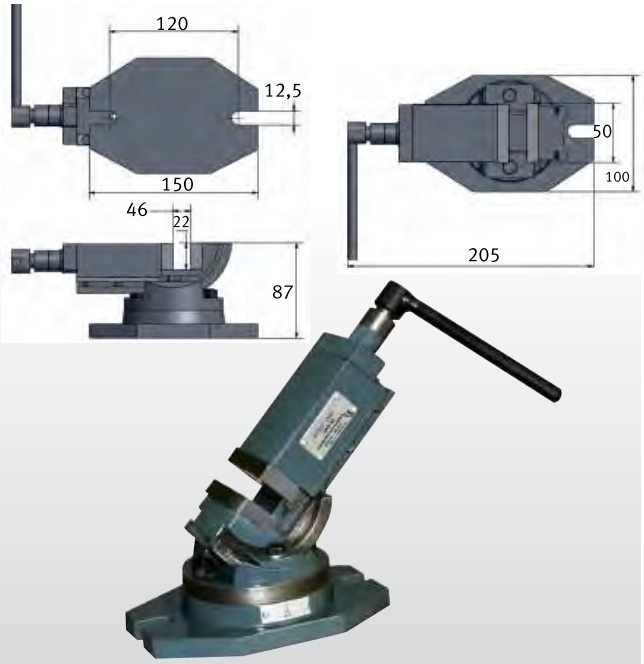
DAS 100	335 5500	**429.00**
Prism jaw	335 5502	**45.00**



Prism jaw

OPTIMUM two-axis vices ZAS 50 335 4170 **99.00**

- Inclinable up to -90°
- Hardened and ground clamping jaws, replaceable
- Well-readable scales for all two axes
- With rotary table, rotatable by 360°
- Net weight 3.4 kg



OPTIMUM triaxial vices MV3

- Horizontal slewing movement up to 90°
- Vertical slewing movement up to ± 45°
- Well-readable scales for all three axes
- Hardened and ground clamping jaws, replaceable
- With rotary table, rotatable by 360°

MV3-75	335 4175	**175.00**
MV3-125	335 4178	**229.00**

Technical data		A	B	C	D	E	F	G	H	I	kg
MV3-75	mm	166	195	12	139	82	34	150	195	75.5	11
MV3-125	mm	212	260	12	185	97	45	206	290	125	26

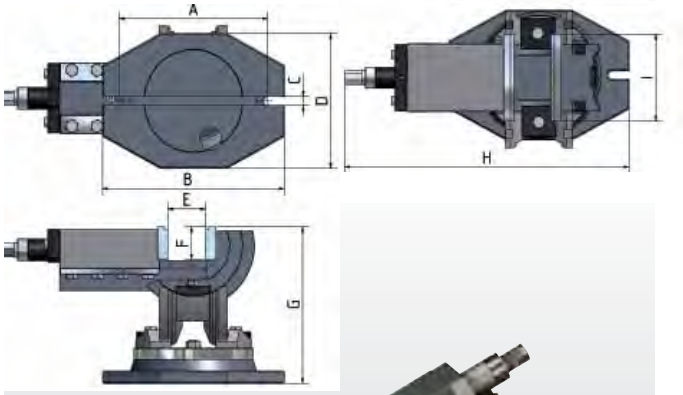


Fig.: MV3-75

Hydraulic vice

- Modular machine vice of high accuracy and repeatability for standard and individual machining on CNC milling machines and machining centres
- Solid structure for milling
- Hardened and ground guide surfaces
- Booster system, little effort, high pressure output when clamping
- Wide clamping range due to locking bolt with various pitches
- High clamping power
- Manufactured of high quality special steel
- Long service life due to high quality
- Clamping pressure 2500 kg/24.5 kN

HCV 125 NEW

HCV 105	353 6210	**590.00**
HCV 125	353 6214	**1'190.00**

Technical data		L	B	C	j	a	T-slots	Clamping pressure	Tension force	kg
HCV 105	mm	442	107	170	42	107	16	24.5 KN	2'500 kg	22
HCV 125	mm	478.5	140	205	45	126	18	40 KN	4'000 kg	35.4

Fig.: HCV 105

Fig.: HCV 125

OPTIMUM precision modular vices PNM

- Modular vice for standard and individual machining on CNC milling machines and machining centres
- Rotary table
- Especially appropriated for tool manufacture, mould making and construction of fixture construction
- Material made of alloyed tool steel · Hardened and ground guidances
- Rapid aligning on the machine table via longitudinal and transversal slots
- High precision · Easy-to-operate · Low installation height
- Universally applicable · Applicable horizontally and vertically

PNM 100	335 5551	**719.00**
PNM 125	335 5553	**899.00**

Technical data		A	B	C	D	E	F	G	H	kg
PNM 100	mm	180	100	270	85	20	30	95	35	10.3
PNM 125	mm	226	125	345	103	23	40	150	40	18.2

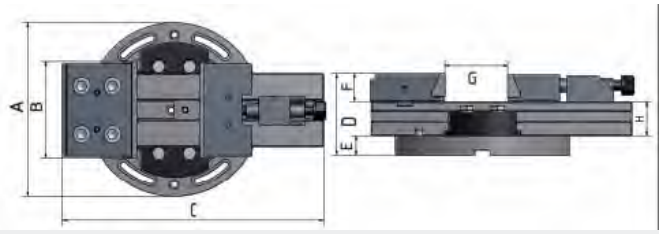


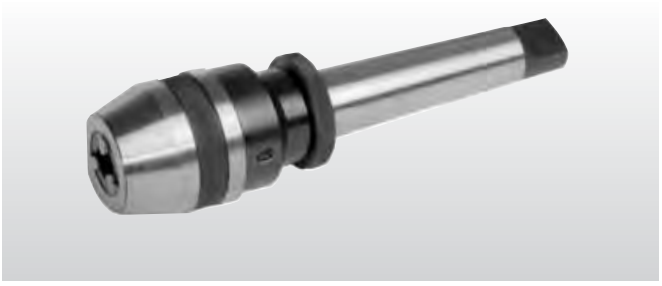
Fig.: PNM 100

OPTIMUM Precision quick-action drill chuck		
· True running accuracy of better than 0.06 mm		
0 - 8 mm; B16	305 0608	**25.00**
0 - 10 mm; B16	305 0610	**29.00**
0 - 13 mm; B16	305 0623	**31.00**
0 - 16 mm; B16	305 0626	**39.00**

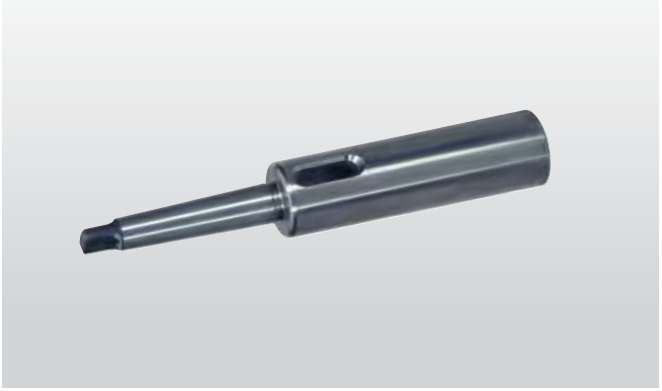
RÖHM quick-action drill chuck		
1 - 13 mm; B 16	305 0656	**45.00**
3 - 16 mm; B 16	305 0657	**49.00**

OPTIMUM direct quick-action drill chuck		
MT2 1 - 16 mm; up to 6'000 rpm	305 0571	**71.00**
MT2 1 - 13 mm; up to 8'000 rpm	305 0572	**61.00**
MT3 1 - 16 mm; up to 6'000 rpm	305 0573	**72.00**
MT4 1 - 16 mm; up to 6'000 rpm	305 0574	**72.00**

NEW



Extension bushes		
MT 2 - MT 3	305 0667	**17.00**
MT 3 - MT 4	305 0668	**25.00**



Holding arbor for cutter head	335 2071	**55.00**
· Outside cone ISO 40		
· Seat of milling cutter Ø 22 mm		

Arbor for drill chuck		
Outside cone **MT 2**	305 0670	**14.90**
· Drill chuck cone M10		
Outside cone **MT 4**	335 0304	**19.90**
· Drill chuck cone B16		
Outside cone **ISO 30**	335 2069	**49.00**
· Drill chuck cone B16		
Outside cone **ISO 40**	335 2070	**59.00**
· Drill chuck cone B16		

Fig.: ISO 40

Vibration absorber machine stand SE 1 / SE 2 / SE 3

- Machines and devices can be installed without anchoring and can be exactly leveled by height adjustment
- Machine capability will be improved due to shock and vibration absorbing

SE3 NEW

Load	SE 1	SE 2	SE 3
Item No	338 1012	338 1016	338 1018
€ plus VAT	**22.00**	**33.50**	**39.00**
Milling machines	340 Kg	460 kg	1'600 kg
Saws/ general machines	570 kg	1'460 kg	3'500 kg
Thread	M12	M 16	M 20
Foot Ø/Foot height	120/32	160/35	185/39

OPTIMUM end mill cutter kit

- Coated with titanium
- Heigher hardness and stability with double to quintuple durability
- Double cutting capacity
- Better workpiece surface
- With cylindric piston and lateral pulling faces
- Types incl. 2 cutting edges to mill key/drilling slots as well as cutouts from the workpiece centre
- Vertical or lateral milling processes can be performed
- Type incl. 4 cutting edges of 30° right-handed helix for good chip clearance for standard or solid materials
- Wooden box

End milling cutter kit HSS 12 pcs 335 2113 **55.00**

- 6 milling cutters, short type
- Models with **2 cutting edges**.
- DIN 1835 B (ø12 x 73, ø10 x 63, ø8 x 61, ø6 x 52, ø5 x 52, ø4 x 51 mm)
- 6 milling cutters, short type
- Models with **4 cutting edges**.
- DIN 1835 B (ø12 x 83, ø10 x 73, ø8 x 6, ø6 x 57, ø5 x 57, ø4 x 55 mm)

End milling cutter kit HSS 20 pcs 338 6200 **105.00**

- 10 milling cutters DIN 327 D · Short type
- Models with **2 cutting edges**
- DIN 1835 B, (3/4/5/6/8/10/12/14/18/20 mm)

and

- 10 milling cutters DIN 844 B · Short type
- Models with **4 cutting edges**
- DIN 1835 B, (3/4/5/6/8/10/12/14/18/20 mm)

Milling cutter kit hard metal coated 335 2118 **450.00**

- 18 pcs; sizes 3 x 3 mm/3 x 4 mm/3 x 6 mm/3 x 8 mm/ 3 x 10 mm/3 x 12 mm
- Model with 4 cutting edges
- Coated full hard metal milling cutter (TiALN)
- Centre cutting for plunging
- Effective cutting angle 35°

Radius milling cutter kit 335 2116 **179.00**

- 9 pcs; sizes 3 x 4 mm/3 x 6 mm/3 x 8 mm
- Model with 2 cutting edges
- Coated full hard metal milling cutter (TiALN)
- Front cutting geometry for plunging
- Effective cutting angle 30°

Twist drill kit 13 mm 305 1010 **35.00**

- Coated with titanium
- Higher service life and durability
- Higher hardness than hard metal
- More rapid working results
- Low wear
- 25 pcs; sizes 1 -13 mm
- Metal box

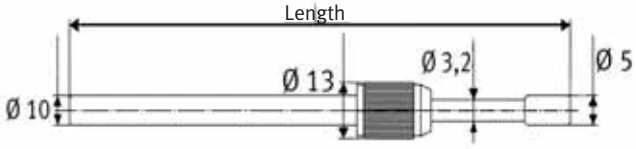
Twist drill HSS with morse taper

- 9 pcs; sizes 14.5/16/18/20/22/24/26/28/30 mm
- wooden box
- High service life
- Well removing of chips
- Right cutting

MT 2	305 1002	**95.00**
MT 3	305 1003	**95.00**

Key button kit 335 1170 **65.00**

- 2 pieces pushbuttons, short and long type
- Material: CV steel
- Accuracy 0.003 mm
- Lengths: 145 mm and 78 mm



Cutter head for copy and surface milling "Made in Germany"

- Universal insert to treat all steel and NE metals
- For surface and copy milling
- Made of special steel - highly coated
- High surface and true running accuracy
- Milling body with offset division for very smooth running and constant cutting
- Base body and clamping shank form a unit, thus short projection length and stable tension
- No additional milling plug-in mandrel is being used
- Special geometry for milling at high speed
- Economical, because the plate can be further turned with blunt cutter (can be used up to 12 times)
- Incl. 5 cutting inserts RDET 1003 MOSN 8026
- Incl. Torx TX15

Seat shaft **MT 2/M10**	335 0212	**189.00**
Seat shaft **MT 3/M12**	335 0213	**209.00**
Seat shaft **ISO 30**	335 0215	**249.00**

Technical data:

- 5 cutting edges
- Outside diameter 52 mm
- Indexable inserts Ø 10 mm
- ISO designation RDX. 1003 D52/R5

Fig.: MT 2

Seat shaft **ISO 40**	335 0216	**289.00**

Technical data:

- 5 cutting edges
- Outside diameter 63 mm
- Cutting inserts Ø 10 mm
- ISO designation RDX. 1003 D63/R5

Fig.: ISO40

HM cutting inserts RDET	335 0220	**39.00**

- RDET 1003 MOSN8026
- Positive cutting geometry
- PVD coated
- For treatment of steel up to 900 N/mm^2, special steel rust-free, aluminium, non-ferrous metal, cast iron
- 5 pieces

HM cutting inserts RDHT	335 0221	**35.00**

- RDHT 1003 MO-FA HF7
- High positive cutting geometry
- Polished
- For treatment of AL alloys, copper alloys, plastic material
- 5 pieces

Fig.: RDET

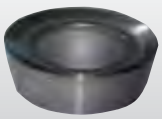


Fig.: RDHT

OPTIMUM precision bore head kit

- Tool kit for the universal use for drilling tasks to manufacture dowel holes, turned grooves, inside threads, etc.
- Also appropriate for outside and vertical processing
- Field of application of Ø 10 mm to Ø 220 mm
- Made of high quality steel, hardened and precision ground
- Including turn-out tool, shank, clamp sleeve, socket wrench
- Box

MT 3	335 2083	**229.00**
MT 4	335 2084	**229.00**
ISO 30	335 2085	**239.00**
ISO 40	335 2086	**239.00**

OPTIMUM precision bore head kit

- Tool kit for the universal use for drilling tasks to manufacture dowel holes, turned grooves, inside threads, etc.
- Also appropriate for outside and vertical processing
- Field of application of Ø 5 mm to Ø 250 mm
- Made of high quality steel, hardened and precision ground
- Including turn-out tool, shank, clamp sleeve, socket wrench
- Box

MT 3	335 2073	**950.00**
ISO 40	335 2074	**950.00**

Collet chucks kit MT 2/M10/ER 25 335 2052 **269.00**
- Collet chuck
- **15 collets**; Sizes Ø2 - Ø16 mm
- Hook spanner
- Wooden box

Collet chucks kit MT 2/M10/ER 32 335 2053 **299.00**
- Collet chuck
- **18 collets**; Sizes Ø3 - Ø20 mm
- Hook spanner
- Wooden box

Collet chucks kit MT 3/M12/OZ25 335 2050 **189.00**
- Collet chuck
- **7 collets**; Sizes Ø6 / Ø8 / Ø10 / Ø12 / Ø16 / Ø20 / Ø25 mm
- Hook spanner
- Plastic box

Collet chucks kit MT 4/M16/OZ25 335 2051 **199.00**
- Collet chuck
- **7 colles**; Sizes Ø6 / Ø8 / Ø10 / Ø12 / Ø16 / Ø20 / Ø25 mm
- Hook spanner
- Plastic box

Collet chucks kit ISO 30/ER32 335 2054 **249.00**
- Collet chuck
- 18 collets, sizes Ø 2 - 20 mm
- 1 pull stud M12/M12
- 1 pull stud BT 30
- Hook spanner
- Metal case

NEW

Collet chucks kit ISO 40/ER32 335 2056 **259.00**
- Collet chuck
- 18 collets, sizes Ø 2 - 20 mm
- 1 pull stud M16/M16
- 1 pull stud BT 40
- Hook spanner
- Metal case

NEW

Collet chuck ISO 30/ER25 335 2046 **119.00**
- Hook spanner

OPTIMUM collet chucks (individual)
- **MT 3 direct clamping / M 12**

Ø 4 mm	335 2004	**15.00**
Ø 6 mm	335 2006	**15.00**
Ø 8 mm	335 2008	**15.00**
Ø 10 mm	335 2010	**15.00**
Ø 12 mm	335 2012	**15.00**
Ø 16 mm	335 2013	**15.00**

OPTIMUM collet chuck kit
MT 2 direct clamping / M 10 335 1980 **89.00**
- 5 pcs; Sizes Ø4 / Ø6 / Ø8 / Ø10 / Ø12 · Wooden box

MT 3 direct clamping / M 12 335 2014 **89.00**
- 6 pcs; Sizes Ø4 / Ø6 / Ø8 / Ø10 / Ø12 / Ø16 · Wooden box

OPTIMUM clamping tool kit SPW 58 pcs
- Metric threads · Handy wall unit
- 24 pcs draw-in bolts
- 6 pcs T-slot nuts
- 6 pcs nuts
- 4 pcs coupling nuts
- 6 pcs step clamps
- 12 pcs clamping blocks

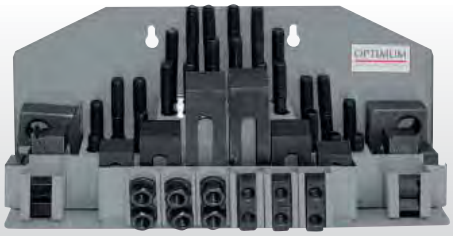
SPW 8 335 2015 **69.00**
- T-slots (size 10 mm) draw bar thread M 8

SPW 10 335 2016 **75.00**
- T-slots (size 12 mm) draw bar thread M 10

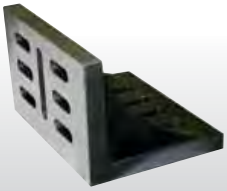
SPW 12 335 2017 **79.00**
- T-slots (size 14 mm) draw bar thread M 12

SPW 14 335 2018 **89.00**
- T-slots (size 16 mm) draw bar thread M 14

SPW 16 335 2019 **99.00**
- T-slots (size 18 mm) draw bar thread M 16



Limit stop angle 90° 338 5052 **82.00**
- For clamping purposes for mechanical processing of workpieces control and marking off works
- Precision: parallelism and rectangularity of 0.01 at 100 mm
- Lateral stiffening fins · Outsides are properly processed
- Dimensions L x W x H: 202 x 126 x 150 mm · Weight 7 kg



Horizontal-vertical circular dividing table with 3-jaw chuck

- Quality circular dividing tables of high quality Meehanite casting
- Reliable and precise
- Precision taper roller bearings
- Stability even under heavy load
- Large spindle hole to clamp longer workpieces
- Direct dividing via locking discs for heigher manufacturing speed for mass parts
- Grade division via 360° scale (RTE 165)
- Grade division via 360° scale with **crank and vernier** (RTU 165)
- Direct dividing by using the notch plate
- 24 positions (15° division)
- 3-jaw chuck
- 7 locking discs for 2/3/4/6/8/12/24 divisions
- Incl. fixing plate with 3 slots

RTE 165	335 6365	**599.00**
RTU 165	335 4165	**759.00**

Technical data		RTE 165	RTU 165
Table diameter	mm	165	165
Overall height	mm	200	221
Width	mm	260	250
Length	mm	218	235
Center height	mm	130	130
Clamping discs	mm	203	203
Passage	mm	36	36
Weight	kg	32.5	48
Direct dividing discs		24 divisions (=15°)	
Indirect dividing discs		2, 3, 4, 6, 8 and 12 divisions	
Dividing accuracy of the direct dividing equipment		45‘	
Clamping option		Horizontal and vertical	
Clamping surface		Including scale 360°	

Fig.: RTU 165

Fig.: RTE 165

Horizontal-vertical circular dividing tables

- Quality circular dividing tables of high quality Meehanite casting
- Reliable and precise
- Precision bearing
- Stability even under heavy load
- Large spindle hole lo clamp longer workpieces
- Quick-action dividing via locking discs for heigher manufacturing speed for mass parts
- Screw hardened and ground
- Working table is scaled to 360°
- 1 turn of the handwheel is equivalent to a 4° rotation
- Scaling on the handwheel 2`
- Possible division via scaled handwheel with vernier

Circular dividing table RT 100	335 6110	**225.00**
Circular dividing table RT 150	335 6150	**219.00**
Lathe chuck flange for RT 150	335 6154	**69.00**
3-jaw chuck 130 mm for RT 150	335 6100	**219.00**
Circular dividing table RT 200	335 6200	**349.00**
Lathe chuck flange for RT 200	335 6254	**79.00**
3-jaw chuck 165 mm for RT 200	335 6225	**239.00**

Technical data		RT 100	RT 150	RT 200
Centering cone		MT2	MT2	MT3
Gear ratio		90:1	90:1	90:1
Plate diameter	mm	Ø 110	Ø 150	Ø 210
Overall height	mm	72	79	104
Length	mm	138	204	265
Width	mm	118	156	199
Center height	mm	80	102	133
Slot width	mm	11	11	16
Number of slots		3	4	4
Indirect div. attachment		no	yes	yes
Net weight	kg	9	12	30

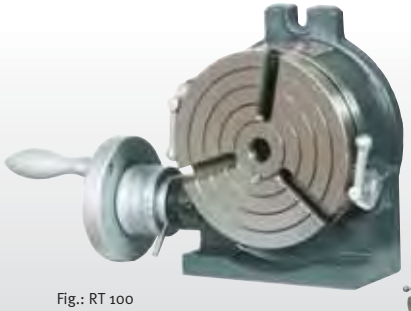


Fig.: RT 100

Fig.: RT 150-CNC

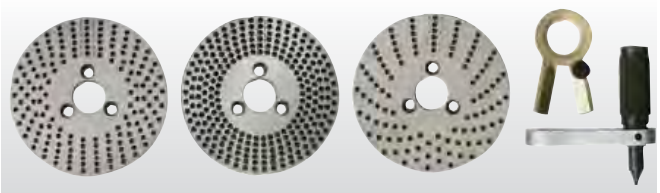
Optional:
CNC add-on kit
refer to page 141

Indirect dividing equipment IT 150	335 6152	**79.00**

- 3 pcs dividing plates
- Sector arm
- Angle shears with spring steel sheet
- Suitable for RT 100/RT 150

Indirect dividing equipment IT 200	335 6205	**99.00**

- 2 pcs dividing plates
- Sector arm
- Angle shears with spring steel sheet
- Suitable for RT 200, RTU 165



Height-adjustable tailstock		
Tailstock Rst 1	335 6155	**89.00**
· Center height 72 - 108 mm		
· Suitable for RT 100, RT 150		
Tailstock Rst 2	335 6157	**99.00**
· Center height 110 - 145 mm		
· Suitable for RT 200, RTE 165, RTU 165		

Universal compressed air tool clamping system		
· Incl. tool clamping device, cover, maintenance unit, crown gear, draw-in rod, switch cabinet, control element		
· High achievable vacuum		
· Short change times by one-hand operation		
· Low weight due to optimised structure		
· Safe locking due to toggle principle		
· Precise guidance due to optimised geometry		
· Lowest air consumption		
Compressed air tool clamping system ISO 30	335 2393	**629.00**
· For BF30 Vario		
Compressed air tool clamping system ISO 40	335 2394	**590.00**
· For MF 2 Vario / MF 4 Vario /BF 46 Vario		

NEW

Factory assembly tool clamping system	900 0490	**250.00**

Adapter plate for assembly of the tool changer		
for **BF 30 Vario**	335 2391	**49.00**
for **BF 46 Vario**	335 2392	**69.00**

NEW

Fig.: Mounting example BF 46 Vario

Threading attachment M5 - M12/B16	335 2042	**329.00**
· Integrated quick return, immediately effective when changing the feed direction		
· 4-stage adjustable slipping clutch		
Scope of delivery:		
· 2 flexible collets		
· 2 open-end wrench		
· Handle		
· Allen key		

Technical data	Threading attachment
Notching path	4 mm
Freewheel	1.5 mm
Length compensation under tension	8.5 mm
Max. speed	1000 rpm
Gear ratio Forward and backward	1:1.75
Cutting range	M5 - M12
Chucking capacity	3.5-10
Length	B16 DIN 238
Lengthe compensation under pressure	156 mm
Piston seat	5 mm

Universal dividing head TA 125	335 6125	**399.00**
· Slewable from -10° up to +90°		
· Hardened and ground worm		
· Precision taper roller bearings		
· Hardened and ground main dividing plate (24-piece division), in order to divide exactly to 15°		
Scope of delivery		
· Height-adjustable tailstock Rst1		
· Centre point 60° / MT2		
· Carrier seat		
· Flange for lathe chucks (Ø 140 mm, t = 12 mm) for carrier pin or drill chuck assembly		

Technical data	TA 125
Gear	40:1
Overall height	175 mm
Width with lathe centre	205 mm
Length	230 mm
Center height	100 mm
Drilling in the arbor shaft (passage)	18 mm
Slot width	16 mm
Direct dividing disc (division)	15^0
	Ø 110 mm
Indirect dividing discs (drilling on the divided circle)	15; 16; 17; 18; 19; 20; 21; 23; 27; 29; 31; 33; 37; 39; 41; 43; 47
True running accuracy	0.015 mm
Net weight	12 kg

OPTIMUM universal table feed

- Milling table feed
- Horizontal assembly (V99)
- Vertical assembly CV250}
- With infinitely variable speed adjustment and rapid traverse
- Right-/left handed rotation
- Transformer, overload protection and limit stop switch
- For self-assembly

OPTI V 99	335 2020	**495.00**
OPTI V 250	335 2024	**529.00**

Fig.: V 99

Fig.: V 250

OPTIMUM cross tables KT

- Coolant gutter
- Dovetail slideway adjustable
- Adjustable handwheel scale of 0.05 mm scaling

KT 120	335 6595	**369.00**
KT 179	335 6596	**469.00**
KT 180	335 6591	**579.00**
KT 210	335 6600	**689.00**

Technical data		KT120	KT179	KT 180	KT210
Length	mm	506	748	945	1´065
Width	mm	400	483	483	555
Height	mm	140	148	169	200
T-slot size	mm	10	12	12	14
Table length	mm	400	500	700	730
Table width	mm	120	180	180	210
Capacity load cross table	kg	40	55	55	80
Foot width	mm	220	274	274	280
Foot length	mm	280	340	340	362
Travel X-axis	mm	220	280	480	480
Travel Y-axis	mm	165	175	175	210
Net weight	kg	22	32	49	84

Fig.: KT 180

Holding-down clamps (2-piece kit)

- Adjustable clamping height
- Brass plate and clamping arm prevents the material from damages

Table slot **16 mm/M 12**	335 2031	**49.00**

- L x W x H: 115 x 42 x 39 mm; height adjustment: 0 - 89 mm

Table slot **18 mm/M 16**	335 2032	**59.00**

- L x W x H: 133 x 50 x 49 mm; height adjustment: 0 - 101 mm

OPTIMUM parallel spacer kit 335 4001 **95.00**

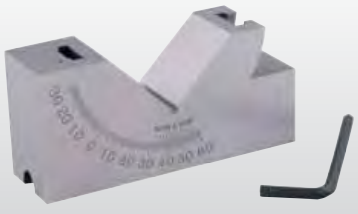
- For precision works for parallel mounting of workpieces on the machine, vices, on marking-on plates or machine tools
- Superfinished, accuracy of 0.01 mm
- Thickness 3 mm
- Length 150 mm
- 20-pcs: sizes 2 x 13 mm/2 x 16 mm/2 x 19 mm/2 x 22 mm/ 2 x 25 mm/2 x 28 mm/2 x 31 mm/2 x 35 mm/2 x 38 mm/2 x 41 mm
- In stable wooden box, assembled ready to hand

OPTIMUM parallel spacer kit 335 4000 **169.00**

- Hardness HRC 50 - 55
- Superfinished, accuracy of 0.01 mm
- 18 pcs; sizes from 5 x 16 x 100 to 22 x 62 x 150
- Plastic box

Prism angle WP 30 adjustable 335 2195 **109.00**

- Solid type for the use on machine tools
- High-precision type
- Adjustable from 0° to 60° and from 0° up to -30°
- Hardened and ground carbon steel
- Precision of perpendicularity 0.005 mm
- Angle tolerance 0.01°
- Dimensions L x W x H: 75 x 25 x 32 mm



Universal coolant equipment		
· Lift max. 2.5 m		
· Conveying capacity 8 l/min		
· Tank capacity 11 litres		
· Tank size Lx WxH: 370 x 245 x 170 mm		
· Complete with tank, flexible tube, hose		
· With German switch/plug combination		
· Magnetic foot attachment of the coolant hose		
· For self-assembly		
Universal coolant equipment 230 V	335 2002	**189.00**
Universal coolant equipment 400 V	335 2001	**189.00**

Coolant lubricant sprayer magnetic MMC1	335 6663	**89.00**
· Size of stand L x W x H: 62 x 50 x 55.5 mm		
· Adhesion of magnetic stand 75 kg		
· Flexible hose		
· Length of coolant hose 500 mm		

Coolant hose KMS 2	335 6660	**39.00**
· Two variable coolant hoses made of individual plastic elements		
· Not electrically conductive		
· Adhesion of the magnetic stand up to 50 kg		
· Length of coolant hoses 335 mm		
· Flexible and stable		
· Insensitive to most solvents and chemicals		
· Universally applicable on all machine tools		

Universal base frame	335 3003	**259.00**
· For milling machines BF 20 Vario / BF 20 L Vario		
· Shelf and chip tray		
· Dimensions L x W x H: 500 x 420 x 900 mm		
· Weight: 35 kg		

Steel base frame	335 3004	**489.00**
· For milling machines BF 30 Vario / F 40 E		
· Chip drip plates		
· Solid and heavy weighted providing for stability		
· Dimensions L x W x H: 940 x 647 x 780 mm		
· Weight: 85 kg		

Fig.: Figure with switch combination of the optional universal coolant equipment (not included in the delivery)

Steel base frame	335 3005	**779.00**
· For milling machines BF 46 Vario		
· Chip drip plates		
· Solid and heavy weighted providing for stability		
· Dimensions L x W x H: 1234 x 750 x 884 mm		
· Weight: 142 kg		

Lathes

Lathes

Screw cutting lathes and bar lathes

Accessories for turning

Compact, multi-purpose lathe with digital speed display

- Hardened and ground bed guideways
- Hardened spindle nose (DIN 6350)
- Guaranteed true running accuracy of the spindle nose of less than 0,009 mm
- Right-/left-handed rotation switchable on the control panel
- Emergency-stop pushbutton and low-voltage release
- With longitudinal slide, cross slide and top slide
- High-precision machining
- Chip protection at the top slide
- Thrust bearing
- Automatic longitudinal/leading spindle drive
- Leading spindle run on two porous bearings
- With leading spindle for threading or automatic longitudinal turning
- Wide threading range due to change gear kit
- Heavily ribbed prism bed made of grey cast iron, inductively hardened and precision ground
- Change gear kit
- Acceptance certificate

Model	D 180 x 300 VARIO
Item No	342 0301
€ plus VAT	**959.00**
Features	
Electrical connection	
Motor power	600 W 230 V ~50 Hz
Machine data	
Centre height	90 mm
Centre width	300 mm
Turning diameter (max.)	180 mm
Turning Ø over cross slide	110 mm
Spindle speed	150 - 2.500 rpm
Number of steps	2 steps, infinitely variable
Spindle taper	MT 3
Spindle hole	21 mm
Passage 3-jaw chuck	20 mm
Bed width	100 mm
Travel top slide	55 mm
Travel cross slide	75 mm
Tailstock taper	MT 2
Tailstock - sleeve travel	65 mm
Longitudinal feed	0.1/0.2 mm/rev
Pitch - Inch (11)	0.5/3 mm/rev
Pitch - Inch (8)	44 - 10 threads/1“
Quadruple tool holder	
Seat height (max.)	8 mm
Dimensions	
Length x width x height	830 x 396 x 355 mm
Net weight	55 kg

Scope of delivery

- 3-jaw chuck Ø 100 mm
- Steady centre MT 2
- Steady centre MT 3
- Splash board
- Chip tray
- Lathe chuck protection
- Quadruple tool holder
- Change gear kit
- Operating tool

Convincing arguments

Main spindle

- Hardened and mounted in adjustable precision taper roller bearings
- Taper roller bearings of P5 quality
- Cylindrical centring consumption, hardened spindle nose with a spindle hole of 21 mm

- True running accuracy of lathe chuck of less than 0.04 mm
- Rotatable quadruple tool holder
- Rolled trapezoid/leading spindles
- Adjustable slide for taper turning

Tailstock

- Can be shifted by ± 2.5 mm for taper turning
- Tailstock spindle sleeve and handwheel with adjustable precision scaling

Accessories	Item No	€ plus VAT
· 4-jaw chuck Ø 100 mm (centrical)	344 0711	**129.00**
· Flange of lathe chucks Ø 100 mm	344 0312	**70.00**
· Plane clamping disc Ø 170 mm	344 0295	**35.00**
· Steady rest Ø max. 50 mm	344 0294	**35.00**
· Follow rest Ø max. 40 mm	344 0293	**30.00**
· Revolving lathe centre MT2	344 0702	**45.00**
· Collet chuck ER 25	344 0305	**70.00**
· Collet chuck ER 32	344 0306	**79.00**
· Collet kit ER 25, 1-16 mm, 15 pcs	344 1109	**149.00**
· Lathe tool kit HM 8 mm, 7 pcs	344 1011	**89.00**
· Lathe tool kit 8 mm, 11 pcs	344 1008	**59.90**
· Lathe tool kit HM 10 mm, 7 pcs	344 1111	**110.00**
· Lathe tool kit 10 mm, 11 pcs	344 1108	**59.90**
· Quick-action tool holder SWH-AA	338 4311	**250.00**
· Single tool holder 13x50 type D	338 4312	**55.00**
· Factory assembly SWH	900 0401	**60.00**
· Digital magnetic measuring system MPA 3-S	338 3902	**749.00**

Please find more accessories from page 84 on

Heimwerker Test 05.2002

Lathes with feed gear for demanding users.
"VARIO" - type with infinitely variable speed control for brushless motor

- Hardened and ground bed guideways
- Guaranteed true running accuracy of the spindle nose of less than 0.009 mm
- Vario type with smooth running and powerful DC drive with excellent control characteristics
- True running accuracy of the lathe chuck of less than 0.04 mm
- Emergency-stop pushbutton and low-voltage release
- Incl. longitudinal slide, cross slide and top slide
- Incl. leading spindle for threading or automatic longitudinal turning
- Handwheels on the slide with adjustable precision scaling of 0.04/0.01 mm
- Wide threading range due to change gear kit
- Smooth feed gear with rounded toothed wheels, running in the oil quench
- High quality lathe chuck protection
- With change gear kit for threading
- Thrust bearing
- High-precision machining
- Leading spindle run on two self-lubricating bearings
- Right-/left-handed rotation switchable on the control panel
- High-performance, maintenance-free motor
- Chip protection at the top slide
- Heavily ribbed machine bed made of grey cast, inductively hardened (HRC 42-52) and precision ground
- Automatic longitudinal/leading spindle drive
- Rolled trapezoid spindles
- Acceptance certificate

Model	**D 240 x 500 G**	**D 280 x 700 G**
Item No (230 V)	342 5001	342 7001
Item No (400 V)	342 5003	342 7003
€ plus VAT	**1'490.00**	**1'990.00**
Model	**D 240 x 500 DC Vario**	**D 280 x 700 DC Vario**
Item No (230 V)	342 5006	342 7006
€ plus VAT	**2'150.00**	**2'490.00**
Features		
Electrical connection		
Motor	750 W ~50 Hz	850 W ~50 Hz
Motor Vario machines	1.5 kW ~50 Hz	1.5 kW ~50 Hz
Machine data		
Centre height	125 mm	140 mm
Centre width	550 mm	700 mm
Turning Ø over lathe bed	250 mm	266 mm
Bed width	135 mm	180 mm
Spindle speed	125 - 2'000 rpm	150 - 2'000 rpm
Number of steps	6 steps	6 steps
Spindle speed DC Vario machines	30 - 4'000 rpm	30 - 4'000 rpm
Number of steps DC Vario machines	4 steps, infinitely variable	4 steps, infinitely variable
Spindle taper	MT 4	MT 4
Spindle hole	26 mm	26 mm
Travel top slide	70 mm	60 mm
Travel cross slide	110 mm	160 mm
Tailstock seat	MT 2	MT 2
Tailstock - sleeve travel	65 mm	85 mm
Longitudinal feed in the range of	0.07/0.2 mm/rev	0.07/0.2 mm/rev
Pitch - metric in the range of	0.2/3.5 mm/rev	0.2/3.5 mm/rev
Pitch - inch in the range of	56 - 8 threads/1"	56 - 8 threads/1"
Quadruple tool holder seat height	(max.) 13 mm	(max.) 13.5 mm
Dimensions		
Length x width x height	1'250 x 585 x 475 mm	1'370 x 640 x 535 mm
Length x width x height DC Vario	1'250 x 650 x 420 mm	1'370 x 660 x 440 mm
Net weight	125 kg	180 kg
Scope of delivery	3-jaw chuck Ø 125 mm, steady centre MT2, steady centre MT4, splash board, chip tray, lathe chuck protection, HSS cutting tool, lathe dog, quadruple tool holder change gear kit, operating tool, acceptance certificate	

THE ORIGINALS

Optional accessories
· **Digital magnetic measuring system MPA 3-S**
Item No 338 3902; **€ 739.00 plus VAT**

Info on MPA 3-S on page 98

Main spindle
· Hardened and mounted in adjustable precision taper roller bearings
· Two taper roller bearings of P5 quality
· Short taper, hardened spindle nose with a spindle bore of 26 mm

Speed change
· Easy and rapid via V-belts
· Vario machines easy-to-adjust via potentiometers

Digital speed display
· For Vario machines

Feed gear
· Smooth running
· Rounded toothed wheels
· Running in an oil quench

Optional accessories
Machine base frame with shelves
Item No 344 3902; **€ 299.00 plus VAT**

Slide
· Quadruple tool holder
· All guidings adjustable without clearance due to V-ledges
· Rolled trapezoid spindles
· Chip protection at the top slide

Tailstock
· Adjustable by ± 5 mm for taper turning
· Tailstock spindle sleeve and handwheel with adjustable precision scaling of 0.02 mm
· Rapid and easy adjustment of the tailstock via clamping lever

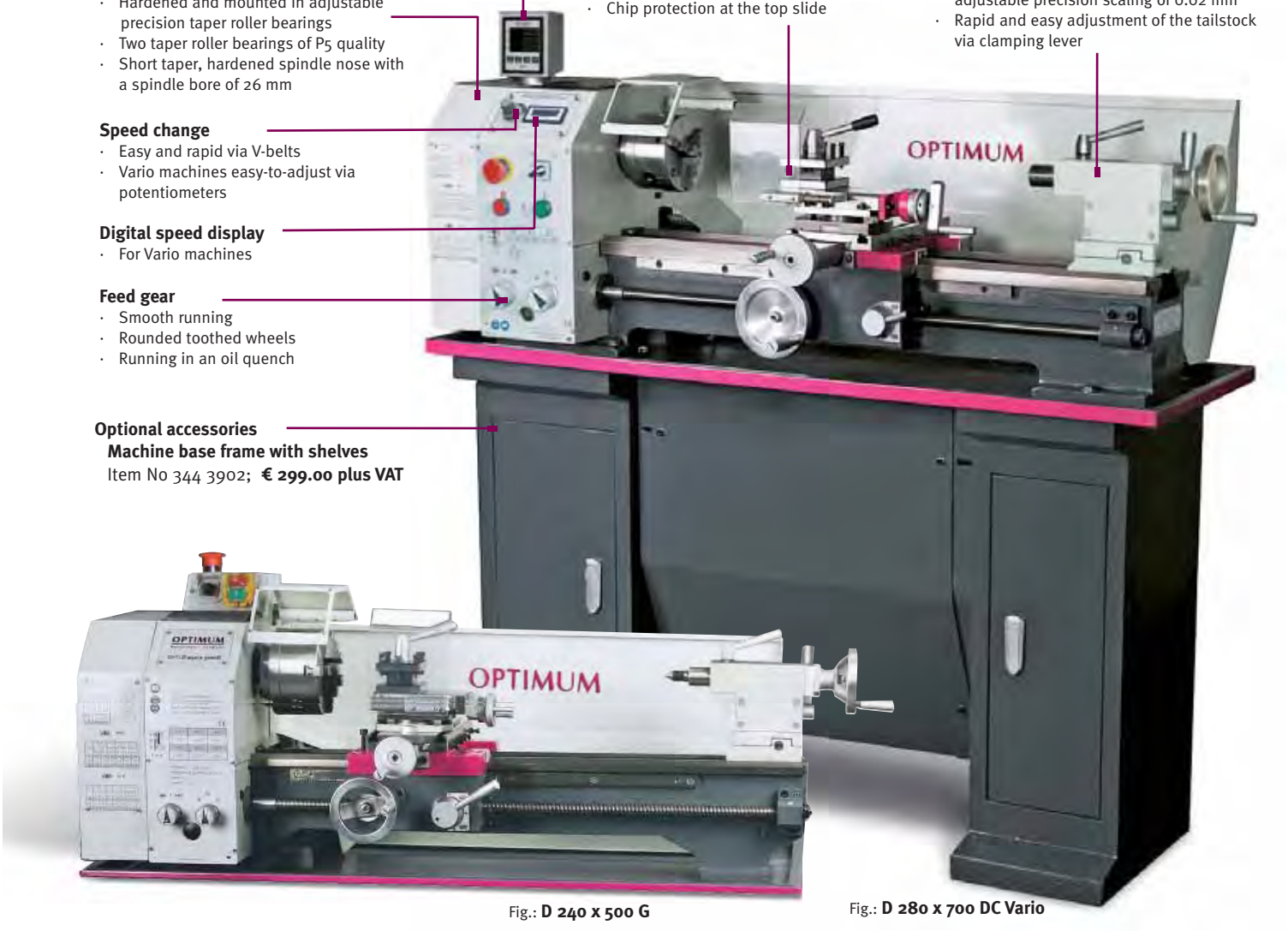


Fig.: **D 240 x 500 G**

Fig.: **D 280 x 700 DC Vario**

Please find CNC reversion kits from page 136 on

Accessories D 240 x 500 G	Item No	€ plus VAT
· Face clamping disc Ø 240 mm	344 1352	50.00
· Steady rest Ø max. 50 mm	344 1315	45.00
· Follow rest Ø max. 34 mm	344 1310	45.00
· Revolving centre MT2	344 0702	45.00
· Lathe tool kit HM 8 mm, 7-pieces	344 1011	89.00
· Lathe tool kit 8 mm, 11-pieces	344 1008	59.90
· Lathe tool kit HM 10 mm, 7-pieces	344 1111	110.00
· Lathe tool kit 10 mm, 11-pieces	344 1108	59.90
· Lathe tool kit HM 12 mm, 9-pieces	344 1211	129.00
· Collet kit ER 25, 1 - 16 mm	344 1109	149.00
· Collet kit ER 32, 3-20 mm	344 1122	169.00
· Collet chuck ER 25	344 1305	90.00
· Collet chuck ER 32	344 1306	99.00
· Quick-action tool holder SWH 1-A	338 4301	419.00
· Factory assembly SWH	900 0401	60.00
· Add-on adapter for assembly of column and milling head BF20(L) Vario	335 6572	99.00
· Add-on adapter for assembly of column and milling head BF16 Vario	335 6568	99.00

Please find more accessories from page 84 on

Accessories D 280 x 700 G	Item No	€ plus VAT
· Face clamping disc Ø 265 mm	344 1452	60.00
· Flange for lathe chucks Ø 160 mm	344 1413	79.00
· Steady rest Ø max. 55 mm	344 1415	55.00
· Follow rest Ø max. 56 mm	344 1410	55.00
· Revolving centre MT2	344 0702	45.00
· Lathe tool kit HM 8 mm, 7-pieces	344 1011	89.00
· Lathe tool kit 8 mm, 11-pieces	344 1008	59.90
· Lathe tool kit HM 10 mm, 7-pieces	344 1111	110.00
· Lathe tool kit 10 mm, 11-pieces	344 1108	59.90
· Lathe tool kit HM 12 mm, 9-pieces	344 1211	129.00
· Collet kit ER 25, 1 - 16 mm	344 1109	149.00
· Collet kit ER 32, 3 - 20 mm	344 1122	169.00
· Collet chuck ER 25	344 1305	90.00
· Collet chuck ER 32	344 1306	99.00
· Quick-action tool holder SWH 1-A	338 4301	419.00
· Factory assembly SWH	900 0401	60.00
· Add-on adapter for assembly of column and milling head BF20(L) Vario	335 6572	99.00
· Add-on adapter for assembly of column and milling head BF16 Vario	335 6568	99.00

Completely equipped screw cutting and bar lathes with oil-quenched feed gear. "VARIO" type with frequency converter "Made in EU"

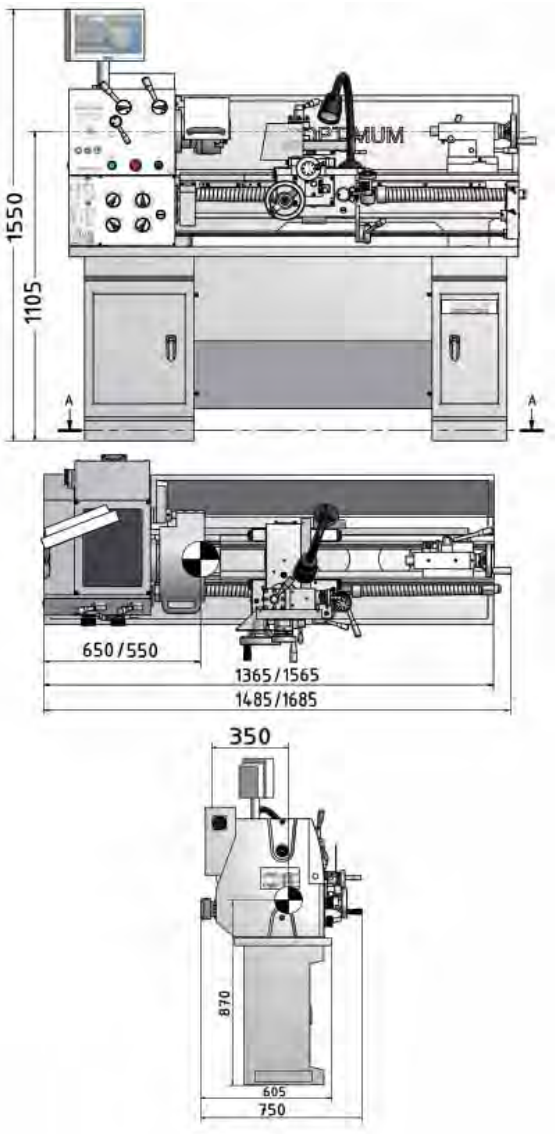
- Hardened and ground bed guideways
- Camlock spindle seat ASA D1 - 4"
- Guaranteed true running accuracy of the spindle nose of less than 0.015 mm
- Tailstock can be shifted by ± 10 mm for taper turning
- Right-/left-handed rotation at the lathe slide, switchable via indexing spindle
- Chip protection at the top slide
- Machine lamp
- Emergency-stop pushbutton, protective motor switch, lockable main switch
- Cover for leading spindle
- Machine base frame with tool box
- "Vario" type with frequency converter "Made in EU" with extreme high-torque and mostly constant torque progression
- "Vario" type with frequency monitoring avoiding malfunctions
- DPA machines incl. digital position display, glass scales and factory assembly

Model	**D 320 x 630**	**D 320 x 920**
Item No	340 0633	340 0923
€ plus VAT	**3'390.00**	**3'690.00**
Model	**D 320 x 630-DPA**	**D 320 x 920-DPA**
Item No	340 0633DPA	340 0923DPA
€ plus VAT	**4'490.00**	**4'750.00**
Performance features		
Electrical connection		
Motor power	1.5 kW 400 V ~50 Hz	
Machine data		
Centre height	160 mm	
Centre width	630 mm	920 mm
Turning Ø over lathe bed	320 mm	
Turning Ø over cross slide	190 mm	
Turning Ø in the bed bridge	430 mm	
Length of bed bridge	230 mm	
Spindle speed	65 - 1'800 rpm	
Number of steps	18 steps	
Spindle speed Vario machines	10 - 2'500 rpm	
Number of steps Vario machines	8 steps, infinitely variable	
Spindle taper	MT 5	
Spindle seat	Camlock ASA D1 - 4"	
Spindle hole	38 mm	
Bed width	181 mm	
Travel top slide	85 mm	
Travel cross slide	162 mm	
Tailstock seat	MT 3	
Tailstock - sleeve travel	100 mm	
Length feed in the range of	0.052/1.392 mm/rev; 32 pcs. length infeed	
Transverse feed in the range of infeed	0.014/0.380 mm/rev; 32 pcs. transverse	
Pitch - metric in the range of	0.4 - 7 mm: 26 pcs. thread pitches	
Pitch - inch in the range of	56 - 4 threads/1"; 34 pcs. thread pitches	
Quadruple tool holder seat height	16 x 16 mm	
Dimensions		
Length	1'420 mm	1'685 mm
Width x height	750 x 1'350 (DPA 1'550) mm	
Net weight	400 kg	410 kg

Vario retrofit only for	**D 320 x 630-DPA**	**D 320 x 920-DPA**
Item No	340 2931	340 2932
€ plus VAT	**1'990.00**	**1'990.00**

· Incl. Vario retrofit kit 400V
· Exchange digital position display DPA 2000 to DPA 2000S
· Incl. factory assembly

Dimensions



Main spindle
- Hardened and ground
- Running in an oil quench
- Run on 2 adjustable precision taper roller bearings

Main spindle gearwheels
- Smooth running, hardened and ground
- Closed **fast acting feed gear**

Slide
- Precisely machined
- Adjustment range top slide ± 90°
- Handwheels with adjustable precision scaling
- Quadruple tool holder
- Right-/left-handed rotation at the slide switchable via indexing spindle

Halogen machine lamp
- Covered articulated bracket
- High positioning stability

Prism bed
- Heavily ribbed
- Inductively hardened
- Precision ground

Bed bridge
- The turning diameter is increased to 430 mm by taking out the bed bridge

Guidings
- All guidings adjustable via V-ledges

Tailstock
- Adjustable by +/- 10 mm for taper turning
- Tailstock spindle sleeve and handwheel with adjustable precision scaling of 0.025 mm

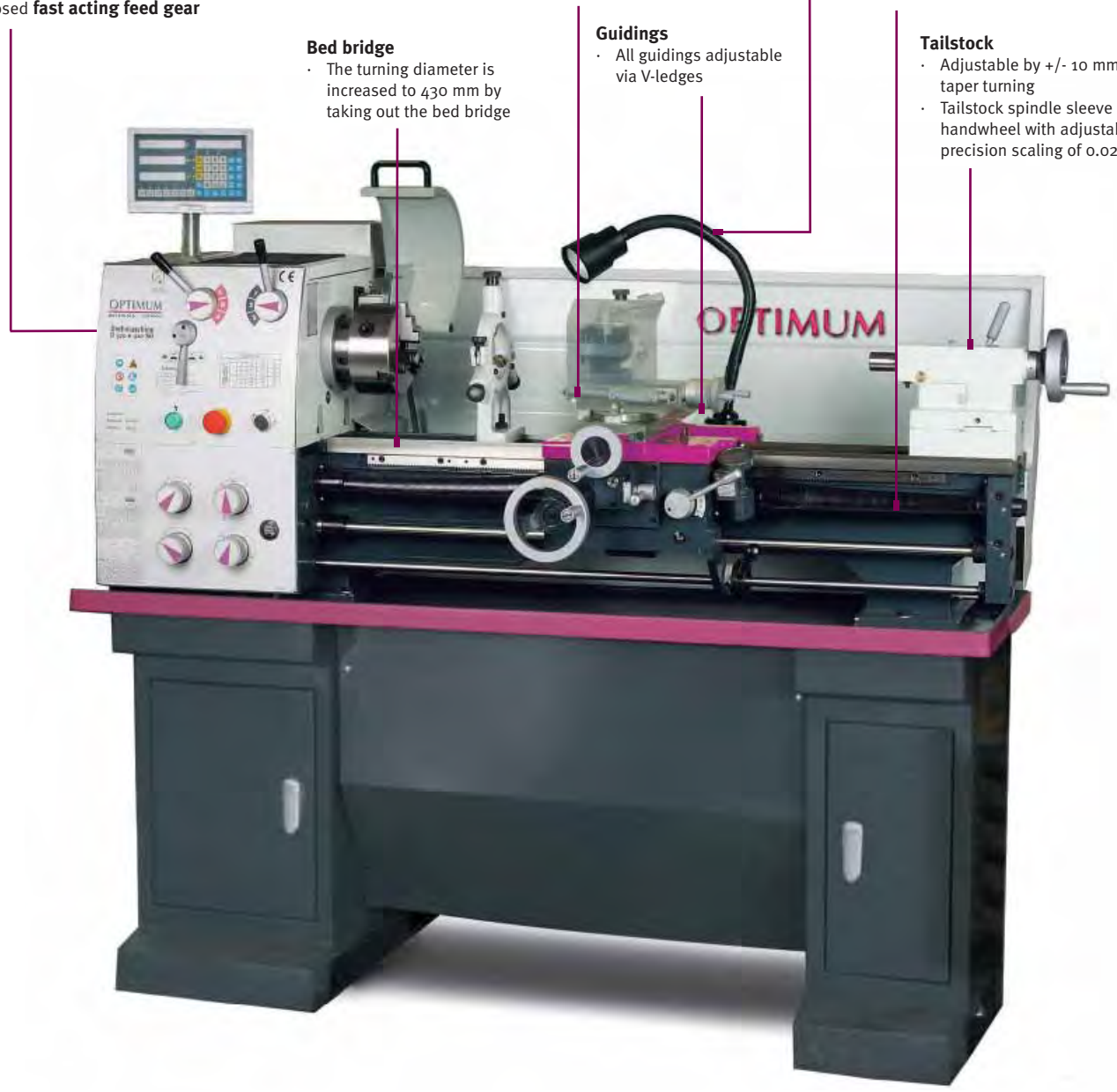


Fig.: **D 320 x 920-DPA**

Please find CNC reversion kit from page 138 on

Accessories	Item No	€ plus VAT
· ROHM 3-jaw chuck Camlock Ø 200 mm	344 1531	429.00
· ROHM 4-jaw chuck Camlock Ø 200 mm	344 1532	479.00
· ROHM Face clamping disc Ø 260 mm Direct seat Camlock D1 - 4"	344 1538	555.00
· Lathe tool kit 16 mm, 11-pieces	344 1508	65.00
· Lathe tool kit HM 16 mm, 7-pieces	344 1511	120.00
· Universal collet attachment 5C	344 1506	230.00
· Collet chuck kit 3 - 25 mm, 5c, 17-pieces	344 1509	300.00
· Position limit stop with fine adjustment	344 1524	60.00
· Quick-action tool holder SWH 3-E	338 4303	469.00
· Factory assembly SWH	900 0400	95.00
· Machine stand reducing vibration SE 2	338 1016	33.50

Please find more accessories from page 84 on

Scope of delivery
- 3-jaw chuck Ø 160 mm
- 4-jaw chuck Ø 200 mm with universally adjustable jaws
- Face clamping disc Ø 250 mm
- Revolving centre MT3
- Steady rest Ø max. 70 mm
- Follow rest passage Ø max. 50 mm
- Chip tray
- Machine base (not mounted)
- Splash board (not mounted)
- Lathe chuck protection
- Machine lamp
- Threading gauge
- Quadruple tool holder
- Change gear kit
- Operating tool
- First filling with high-grade Mobil oil

Fully equipped engineer's lathe with closed feed gear Quick and comfortable switching of the feed pitches. "VARIO" type with frequency converter "Made in EU"

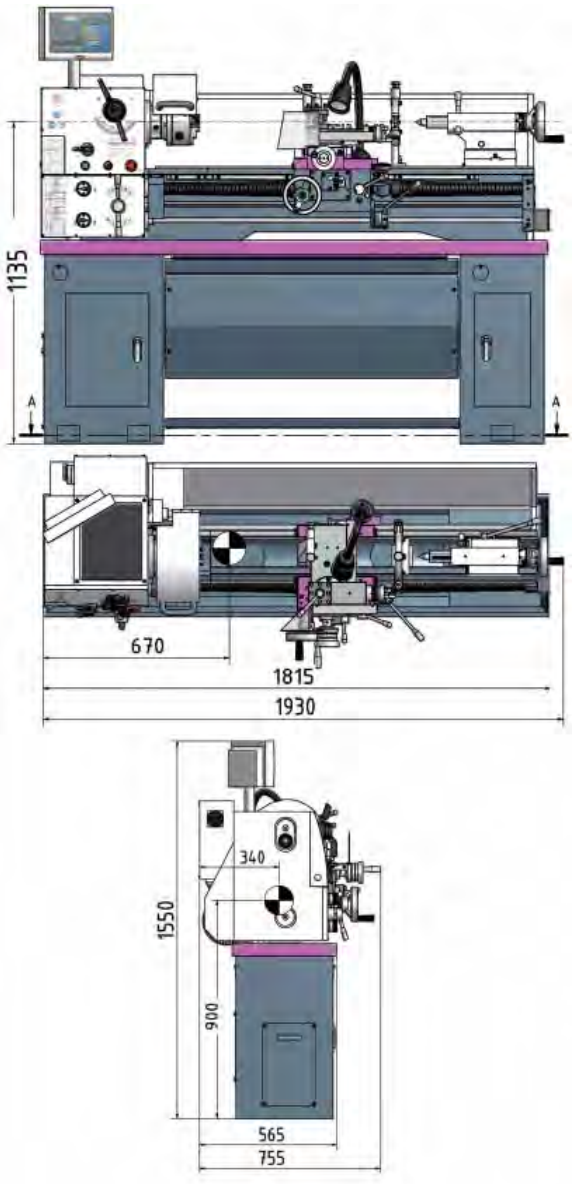
- Hardened and ground bed guideways
- Camlock spindle seat ASA D 1 -4"
- Guaranteed true running accuracy of the spindle nose of less than 0.015 mm
- Hardened and ground toothed wheels and shafts, oil-quenched and running on precision bearings
- Tailstock can be shifted by ± 10 mm for taper turning
- Right-/left-handed rotation at the lathe slide, switchable via indexing spindle
- Chip protection at the top slide
- Emergency-stop pushbutton, protective motor switch, lockable main switch
- Cover for leading spindle
- Mechanical feet spindle brake
- Acceptance certificate
- "Vario" type with frequency converter "Made in EU" with extreme high-torque and mostly constant torque progression
- "Vario" type with frequency monitoring avoiding malfunctions
- DPA machines incl. digital position display, glass scales and factory assembly

Model	**D 330 x 1000**
Item No	340 1000
€ plus VAT	**4'490.00**
Model	**D 330 x 1000-DPA**
Item No	340 1000DPA
€ plus VAT	**5'590.00**
Performance features	
Electrical connection	
Motor power	1.5 kW 400 V ~50 Hz
Machine data	
Centre height	165 mm
Centre width	1'000 mm
Turning Ø over lathe bed	330 mm
Turning Ø over cross slide	198 mm
Turning Ø in the bed bridge	516 mm
Length of bed bridge	210 mm
Spindle speed	70 - 2'000 rpm
Spindle speed Vario machines	15 - 2'500 rpm
Number of steps	8 steps; for Vario infinitely variable
Spindle taper	MT 5
Spindle seat	Camlock ASA D1 - 4"
Spindle hole	38 mm
Bed width	187 mm
Travel top slide	95 mm
Travel cross slide	170 mm
Tailstock seat	MT 3
Tailstock - sleeve travel	100 mm
Length infeed in the range of	0.082/2.711 mm/rev; 40 pcs. length infeed
Transverse feed in the range of	0.018/0.583 mm/rev; 40 pcs. transverse infeed
Pitch - metric in the range of	0.4/7 mm/rev; 32 pcs. thread pitches
Pitch - inch in the range of	56 - 4 threads/1"; 40 pcs. thread pitches
Trapezoid thread	8 - 120; 32 pcs. trapezoid thread
Modular thread	0.2 - 3.5; 27 pcs. modular thread
Quadruple tool holder	
Seat height (max.)	16 mm
Dimensions	
Length x width x height	1'930 x 755 x 1'300 (DPA 1'550) mm
Net weight	550 kg

Vario retrofit only for	**D 330 x 1000-DPA**
Item No	340 2933
€ plus VAT	**2'490.00**

· Incl. Vario retrofit kit 400V
· Exchange digital position display DPA 2000 to DPA 2000S
· Incl. factory assembly

Dimensions



Main spindle
- Running in an oil quench

Main spindle gearwheels
- Smooth running, hardened and ground
- Closed fast acting feed gear

Bed bridge
- The turning diameter is increased to 516 mm by taking out the bed bridge

Slide
- Precisely machined
- Adjustment range top slide ± 90°
- Handwheels with adjustable precision scaling of 0.04/0.02 mm
- Quadruple tool holder
- Chip protection at the top slide

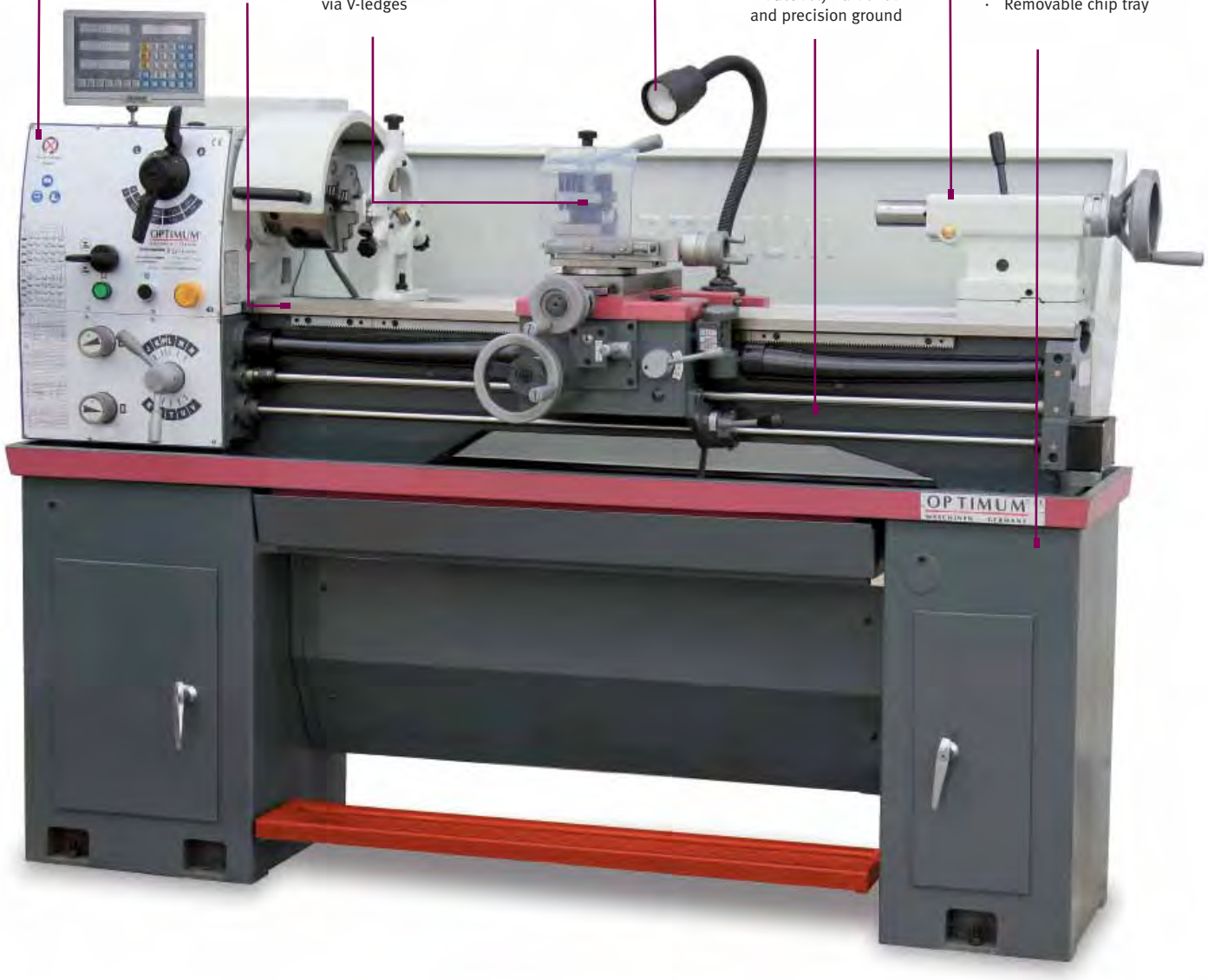
Guidings
- All guidings adjustable via V-ledges

Halogen machine lamp
- Covered articulated bracket
- High positioning stability

Prism bed
- Heavily ribbed
- Grey casting
- Inductively hardened and precision ground

Tailstock
- Adjustable by +/- 10 mm for taper turning
- Tailstock spindle sleeve and handwheel with adjustable precision scaling of 0.025 mm

Base frame
- Mounted
- Tool box
- Lockable doors
- Removable chip tray



Accessories	Item No	€ plus VAT
· ROHM 3-jaw chuck Ø 200 mm Camlock	344 1531	**429.00**
· ROHM 4-jaw chuck Ø 200 mm Camlock	344 1532	**479.00**
· ROHM Face clamping disc Ø 260 mm Direct seat Camlock D1 - 4"	344 1538	**555.00**
· Revolving centre MT 3	344 0703	**50.00**
· Lathe tool kit 16 mm, 11-pieces	344 1508	**65.00**
· Lathe tool kit 16 mm, 7-pieces	344 1511	**120.00**
· Collet kit 3 - 25 mm, 5c, 17-pieces	344 1509	**300.00**
· Quick-action tool holder SWH 3-E	338 4303	**469.00**
· Factory assembly SWH	900 0400	**95.00**
· Position limit stop with fine adjustment	344 1524	**60.00**
· Universal collet attachment 5C	344 1506	**230.00**
· Machine stand reducing vibration SE 2	338 1016	**33.50**

Please find more accessories from page 84 on

Scope of delivery
- 3-jaw chuck Ø 160 mm centric clamping
- 4-jaw chuck Ø 200 mm with universally adjustable jaws
- Face clamping disc Ø 250 mm
- Reducing bush MT 5/MT 3
- 2 steady centres MT 3
- Steady rest passage up to Ø 100 mm
- Follow rest passage up to Ø 95 mm
- Chip protection at the top slide
- Lathe chuck protection
- Spindle brake
- Machine base mounted with tool box
- Splash board mounted
- Threading gauge
- Quadruple tool holder
- Machine lamp
- Change gear kit
- Operating tool
- First filling with high-grade Mobil oil

New
including separate coolant tank

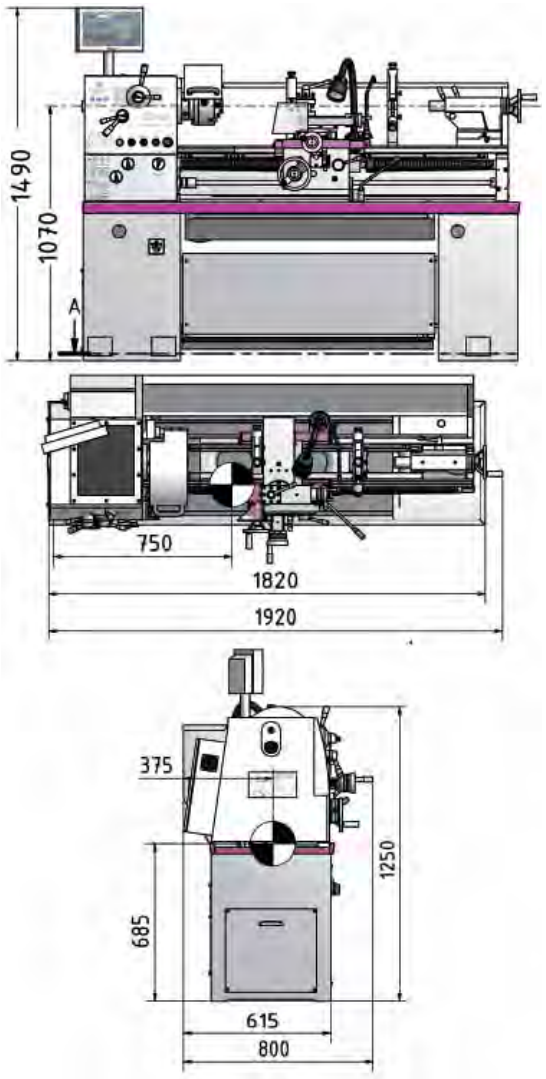
Fully equipped precision screw cutting and bar lathe with closed feed gear for quick and comfortable switching of the feed pitches.
"VARIO" type equiped with frequency converter "Made in EU"

- Hardened and ground bed guideways
- Camlock spindle seat ASA D1 - 4"
- Guaranteed true running accuracy of the spindle nose of less than 0.015 mm
- Smooth running, hardened and ground main spindle gearwheels
- Closed fast acting feed gear, hardened and ground toothed wheels and shafts, oil-quenched and running on precision bearings
- Tailstock can be shifted by ± 5 mm for taper turning
- Right-/left-handed rotation at the lathe slide, switchable via indexing spindle
- Steady and follow rest
- Emergency-stop pushbutton, protective motor switch, lockable main switch
- Cover for leading spindle
- Mechanical feet spindle brake
- Adjustable scale of the threading gauge
- Coolant tank separate incl. level indicator and oil separator; for easy and complete draining and cleaning
- Acceptance certificate
- "Vario" type with frequency converter "Made in EU" with extreme high-torque and mostly constant torque progression
- "Vario" type with frequency monitoring avoiding malfunctions
- DPA machines incl. digital position display, glass scales and factory assembly

Model	**D 360 x 1000**
Item No	340 1150
€ plus VAT	**6'290.00**
Model	**D 360 x 1000-DPA**
Item No	340 1150DPA
€ plus VAT	**7'290.00**
Performance features	
Electrical connection	
Main motor power, 2 stages	1.5/2.4 kW 400 V ~50 Hz
Coolant equipment	40 W
Machine data	
Centre height	180 mm
Centre width	1'000 mm
Turning Ø over lathe bed	356 mm
Turning Ø over cross slide	220 mm
Turning Ø in the bed bridge	516 mm
Length of bed bridge	240 mm
Spindle speed	45 - 1'800 rpm
Spindle speed Vario machines	10 - 2'500 rpm
Number of steps	16 steps; for Vario infinitely variable
Spindle taper	MT 5
Spindle seat	Camlock ASA D1 - 4"
Spindle hole	38 mm
Bed width	205 mm
Travel top slide	95 mm
Travel cross slide	180 mm
Tailstock seat	MT 3
Tailstock - sleeve travel	120 mm
Length infeed in the range of	0.043/0.653 mm/rev; 42 pcs. length infeed
Transverse feed in the range of	0.015/0.220 mm/rev; 42 pcs. transverse infeed
Pitch - metric in the range of	0.45/7.5 mm/rev; 37 pcs. thread pitches
Pitch - inch in the range of	112 - 4 threads/1"; 28 pcs. thread pitches
Quadruple tool holder	
Seat height (max.)	16 mm
Dimensions	
Length x width x height	1'920 x 800 x 1'250 (DPA 1'490) mm
Net weight	850 kg

Vario retrofit only for	**D 360 x 1000-DPA**
Item No	340 2936
€ plus VAT	**2'590.00**
· Incl. Vario retrofit kit 400V	
· Exchange digital position display DPA 2000 to DPA 2000S	
· Incl. factory assembly	

Dimensions



Main spindle
- Running in an oil quench
- Hardened and ground
- Running on 2 adjustable precision taper roller bearings

Main spindle gearwheels
- Smooth running, hardened and ground
- Closed fast acting feed gear

Slide
- Precisely machined
- Adjustment range top slide ± 90°
- Handwheels with adjustable precision scaling of 0.04/0.02 mm
- Quadruple tool holder
- All guidings adjustable via V-ledges
- Chip protection at the top slide

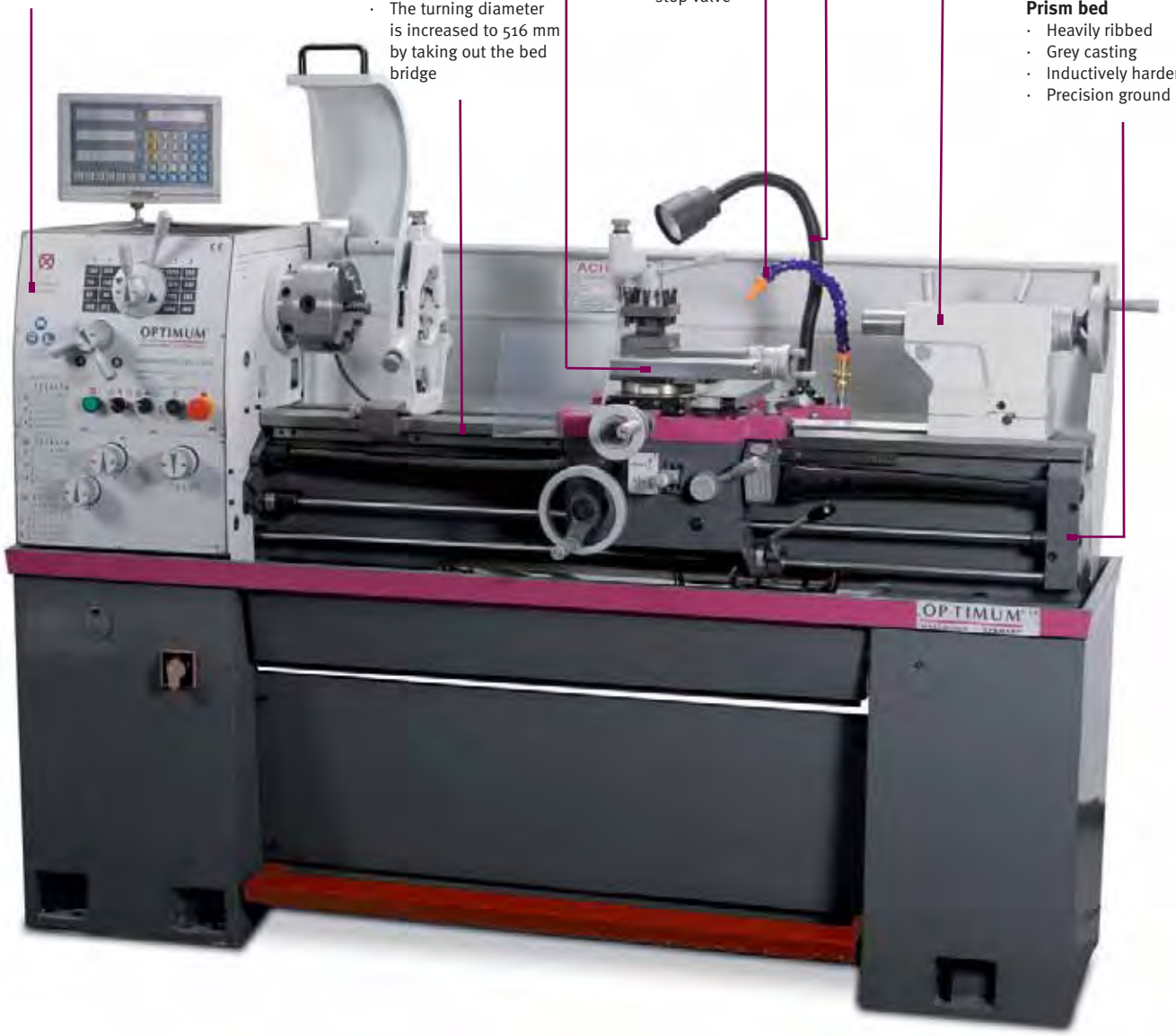
Bed bridge
- The turning diameter is increased to 516 mm by taking out the bed bridge

Halogen machine lamp
- Covered articulated bracket
- High positioning stability

Coolant equipment
- Variable hose of individual plastic elements
- Dosing and stop valve

Tailstock
- Adjustable for taper turning ± 6 mm
- Tailstock spindle sleeve and handwheel with adjustable precision scaling of 0.025 mm

Prism bed
- Heavily ribbed
- Grey casting
- Inductively hardened
- Precision ground



Accessories	Item No	€ plus VAT
· ROHM 3-jaw chuck Ø 200 mm Camlock	344 1531	**429.00**
· ROHM 4-jaw chuck Ø 200 mm Camlock	344 1532	**479.00**
· ROHM Face clamping disc Ø 260 mm Direct seat Camlock D1 - 4"	344 1538	**555.00**
· Revolving centre MT 3	344 0703	**50.00**
· Lathe tool kit 11-pieces, 16 mm	344 1508	**65.00**
· Lathe tool kit 7-pieces, 16 mm	344 1511	**120.00**
· Collet kit 3 - 25 mm, 17-pieces, 5c	344 1509	**300.00**
· Quick-action tool holder SWH 3-E	338 4303	**469.00**
· Factory assembly SWH	900 0400	**95.00**
· Position limit stop with fine adjustment	344 1524	**60.00**
· Universal collet chuck attachment 5C	344 1506	**230.00**
· Machine stand reducing vibration SE 2	338 1016	**33.50**

Please find more accessories from page 84 on

Scope of delivery
- 3-jaw chuck Ø 160 mm centric clamping
- 4-jaw chuck Ø 200 mm with universally adjustable jaws
- Face clamping disc Ø 320 mm
- Reducing bush MT 5/MT 3
- 2 steady centres MT 3
- Steady rest passage up to Ø 100 mm
- Follow rest passage up to Ø 95 mm
- Mounted machine base frame
- Spindle brake
- Splash board mounted
- Lathe chuck protection
- Threading gauge
- Quadruple tool holder
- Coolant equipment
- Machine lamp
- Change gear kit
- Operating tool
- First filling with high-grade Mobil oil

New
including separate coolant tank

Precision screw cutting and bar lathes. Well-engineered technique, complete equipment, easily operable. "VARIO" type equiped with frequency converter "Made in EU"

- Hardened and ground bed guideways
- Camlock spindle seat ASA D1 - 6"
- Main spindle running in an oil bath hardened and ground incl. 2 adjustable precision taper roller bearings
- All metric thread pitches in the range from 0.2 to 14 mm/rev. and all pitch threads in the range from 72 to 2 threads per inch without replacement of change wheels adjustable by change lever on the control panel
- Guaranteed true running accuracy of the spindle nose of less than 0.015 mm
- Central lubrication at the lathe slide
- Removable bed bridge
- Right-/left-handed rotation at the lathe slide, switchable via indexing spindle
- Emergency-stop pushbutton, protective motor switch, lockable main switch
- Coolant tank separate incl. level indicator and oil separator; for easy and complete draining and cleaning
- Cover for leading spindle
- Mechanical feet spindle brake
- Adjustable scale of the threading gauge
- Halogen machine lamp with articulated arm supplied as standard
- Coolant equipment with dosing and stop valve as standard
- Acceptance certificate
- Frequency monitoring by Vario machines avoiding malfunctions

Model	D 420 x 1000	D 420 x 1500
Item No	340 1160	340 1165
€ plus VAT	**8'690.00**	**9'790.00**

Model	D 420 x 1000-DPA	D 420 x 1500-DPA
Item No	340 1160DPA	340 1165DPA
€ plus VAT	**9'690.00**	**10'990.00**

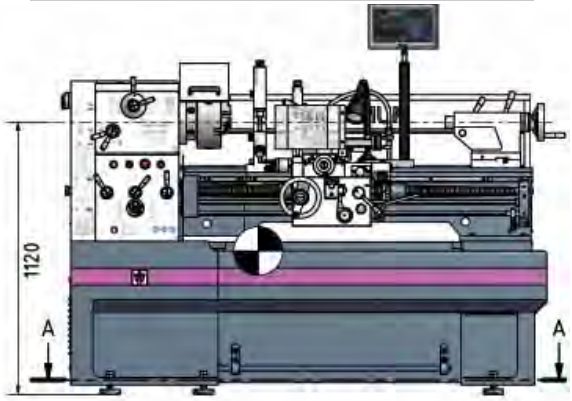
Performance features		
Electrical connection		
Motor power	4.5 kW 400 V ~50 Hz	
Coolant equipment	90 W	
Machine data		
Centre height	210 mm	
Centre width	1'000 mm	1'500 mm
Turning Ø over lathe bed	420 mm	
Turning Ø over cross slide	250 mm	
Turning Ø in the bed bridge	590 mm	
Length of bed bridge	260 mm	
Spindle speed	45 - 1'800 rpm	
Spindle speed Vario machines	10 - 1'800 rpm	
Number of steps	16 steps; for Vario infinitely variable	
Spindle taper	MT 6	
Spindle seat	Camlock ASA D1 - 6"	
Spindle hole	52 mm	
Bed width	250 mm	
Travel top slide	140 mm	
Travel cross slide	230 mm	
Tailstock seat	MT 4	
Tailstock - sleeve travel	120 mm	
Length infeed in the range of	0.05/1.7 mm/rev; 17 length infeeds	
Transverse feed in the range of	0.025/0.85 mm/rev; 17 transverse infeeds	
Pitch - metric in the range of	0.2/14 mm/rev; 39 pcs. thread pitches	
Pitch - inch in the range of	72 - 2 threads/1"; 45 pcs. thread pitches	
Trapezoid thread in the range of	8 - 44; 21 pcs. trapezoid thread	
Modular thread in the range of	0.3 - 3.5; 18 pcs. modular thread	
Quadruple tool holder		
Seat height (max.)	20 x 20 mm	
Dimensions		
Length	2'025 mm	2'525 mm
Width x Height	915 x 1'375 (DPA 1'615) mm	
Net weight	1'550 kg	1'800 kg

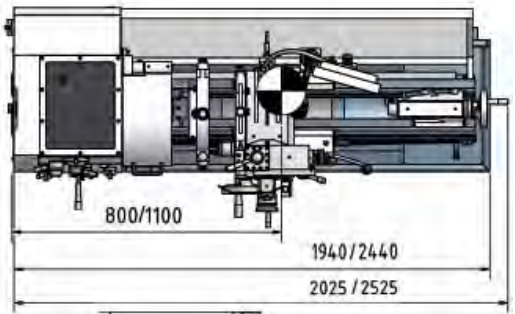
Vario retrofit only for	D 420 x 1000-DPA	D 420 x 1500-DPA
Item No	340 2941	340 2942
€ plus VAT	**3'290.00**	**3'290.00**

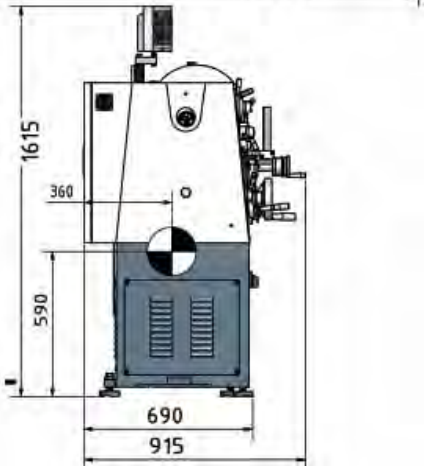
· Incl. Vario retrofit kit 400V
· Exchange digital position display DPA 2000 to DPA 2000S
· Incl. factory assembly

- "Vario" type with frequency converter "Made in EU" with extreme high-torque and mostly constant torque progression
- DPA machines incl. digital position display, glass scales and factory assembly

Dimensions







Main spindle
- Hardened and ground
- Running in an oil quench
- Run on 2 adjustable precision taper roller bearings

Main spindle gearwheels
- Smooth running, hardened and ground

Fast acting feed gear
- Closed type
- Toothed wheels and shafts hardened and ground
- Running in an oil quench on precision bearings

Turret
- With fine adjustment acting as limit stop of lathe slide

Bed bridge
- The turning diameter is increased to 590 mm by taking out the bed bridge

Slide
- Precisely machined
- Adjustment range top slide ± 90°
- Handwheels with adjustable precision scaling of 0.04/0.02 mm
- Quadruple tool holder
- All guidings adjustable via V-ledges
- Chip protection at the top slide

Tailstock
- Adjustable by ± 13 mm for taper turning
- Tailstock spindle sleeve and handwheel with adjustable precision scaling

Base frame and lathe bed
- Meehanite casting
- One-piece casting

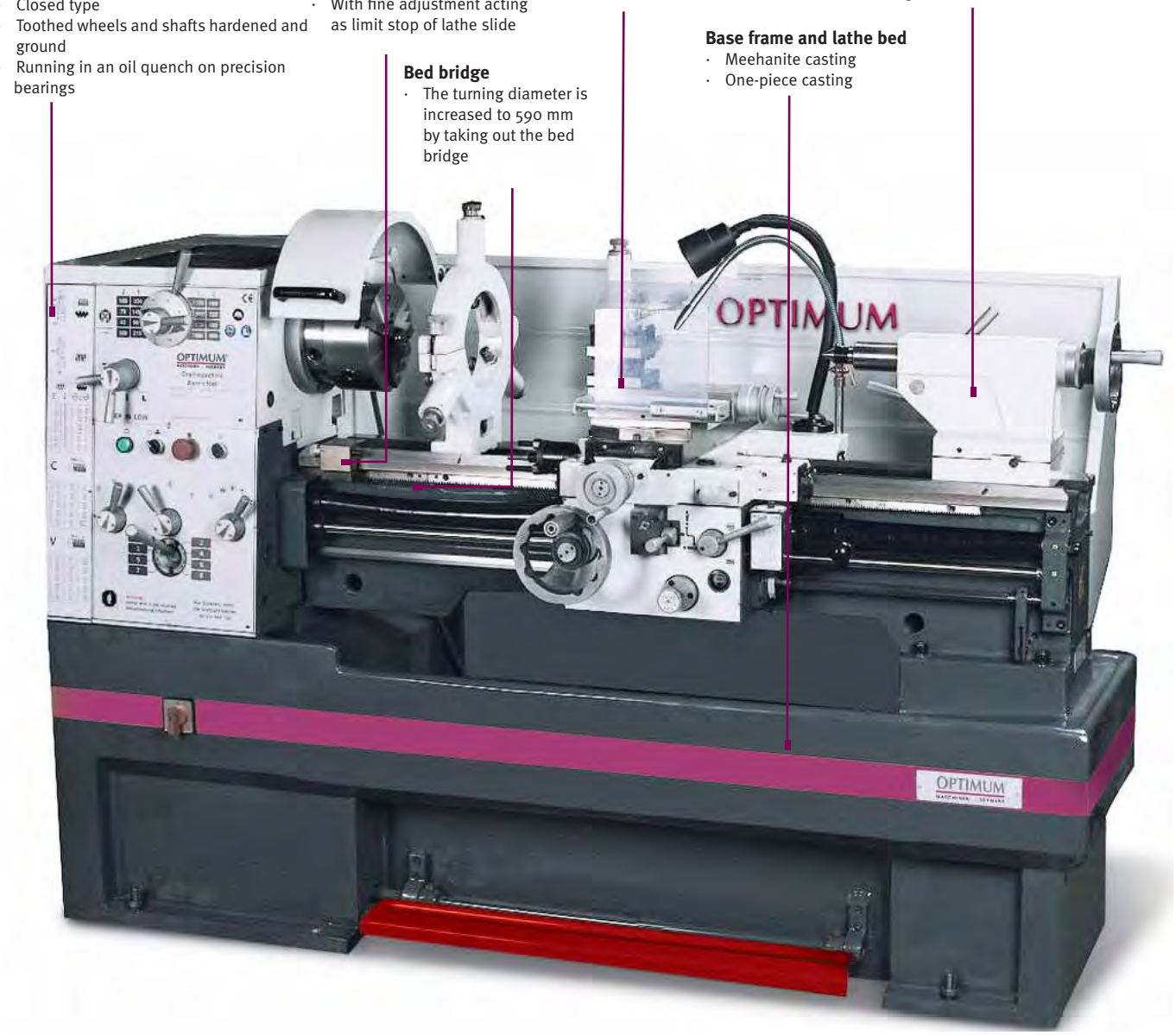


Fig.: **D 420 x 1000**

Accessories	Item No	€ plus VAT
· ROHM 3-jaw chuck Ø 200 mm Camlock	344 1535	**459.00**
· ROHM 4-jaw chuck Ø 200 mm Camlock	344 1536	**525.00**
· ROHM 3-jaw chuck Ø 250 mm Camlock	344 4020	**990.00**
· ROHM 4-jaw chuck Ø 250 mm Camlock	344 4021	**1'080.00**
· ROHM Face clamping disc Ø 400 mm	344 4038	**1'090.00**
· Lathe tool kit HM 20 mm, 7-pieces	344 4011	**185.00**
· Quick-action tool holder SWH 5 - B	338 4305	**559.00**
· Factory assembly SWH	900 0400	**95.00**
· Collet kit 3 - 25 mm, 5c, 17-pieces	344 1509	**300.00**
· Revolving centre MT 4	344 0704	**60.00**
· Machine stand reducing vibration SE 2	338 1016	**33.50**
· Universal collet chuck attachment 5C	344 1507	**240.00**

Please find more accessories from page 84 on

Scope of delivery
- 3-jaw chuck Ø 200 mm
- 4-jaw chuck Ø 250 mm with universally adjustable jaws
- Face clamping disc Ø 350 mm
- Reducing bush MT 6/MT 4
- 2 steady centre s MT 4
- Steady rest passage Ø max. 145 mm
- Follow rest passage Ø max. 75 mm
- Machine base
- Spindle brake
- Splash board mounted
- Lathe chuck protection
- Chip protection at the top slide
- Turret limit stop with fine adjustment
- Threading gauge
- Quadruple tool holder
- Coolant equipment
- Machine lamp
- Change gear kit
- Operating tool
- First filling with high-grade Mobil oil

New
including separate coolant tank

Heavy, fully equipped screw cutting and bar lathes, very smooth running and low-vibration
Base frame and engine plate made of one piece each.
"VARIO" type equiped with frequency converter "Made in EU"

- Hardened and ground bed guideways
- Camlock spindle seat ASA D1 - 6"
- Guaranteed true running accuracy of the spindle nose of less than 0.015 mm
- Closed fast acting feed gear, toothed wheels and shafts hardened and ground, running in an oil quench on precision bearings
- Clearly arranged gear selector levers to switch the feed speeds
- Central lubrication at the lathe slide
- Right-/left-handed rotation at the lathe slide, switchable via indexing spindle
- Mechanical longitudinal feed switch of the lathe slide with four adjustable cams
- Tailstock can be shifted by ± 15 mm for taper turning
- Emergency-stop pushbutton, protective motor switch, lockable main switch
- Digital position display DPA 2000 for a precise measuring of the travels
- Mounted glass scales with an accuracy of 5 µm
- Quick-action tool holder with tool holder for square tools
- Cover for leading spindle
- Coolant tank separate incl. level indicator and oil separator; for easy and complete draining and cleaning according to DIN
- Mechanical feet spindle brake
- Halogen machine lamp with articulated bracket supplied as standard and coolant equipment with dosing and stop valve
- Adjustable scale of the threading gauge
- Prepared for subsequent add-on of rapid feed "Rapid Speed"
- "Vario" type with frequency monitoring avoiding malfunctions
- Acceptance certificate

Model	D 460 x 1000-DPA	D 460 x 1500-DPA	D 460 x 2000-DPA
Item No	340 2100DPA-B	340 2150DPA-B	340 2200DPA-B
€ plus VAT	**12'500.00**	**13'700.00**	**14'700.00**
Performance features			
Electrical connection			
Motor power		5.5 kW 400 V ~50 Hz	
Coolant equipment		100 W	
Machine data			
Centre height		230 mm	
Centre width	1'000 mm	1'500 mm	2'000 mm
Turning Ø over lathe bed		465 mm	
Turning Ø over cross slide		270 mm	
Turning Ø in the bed bridge		690 mm	
Length of bed bridge	240 mm		
Spindle speed		25 - 2'000 rpm	
Spindle speed Vario machines		10 - 2'000 rpm	
Number of steps		12 steps; for Vario infinitely variable	
Spindle taper		MT 6	
Spindle seat		Camlock ASA D1 - 6"	
Spindle hole		58 mm	
Bed width		300 mm	
Travel top slide		128 mm	
Travel cross slide		285 mm	
Tailstock seat		MT 4	
Tailstock - sleeve travel		130 mm	
Length infeed in the range of		0.031/1.7 mm/rev; 40 length infeeds	
Transverse feed in the range of		0.014/0.784 mm/rev; 40 transverse feeds	
Pitch - metric in the range of		0.1/14 mm/rev; 53 thread pitches	
Pitch - inch in the range of		112 - 2 threads/1"; 40 thread pitches	
Trapezoid thread in the range of		4 - 112; 50 trapezoid thread	
Modular thread in the range of		0.1 - 7; 34 modular thread	
Quadruple tool holder Seat height (max.)		25 x 25 mm	
Dimensions			
Length	2'200 mm	2'750 mm	3'250 mm
Width x height		1'245 x 1'370 (DPA 1'568)mm	
Net weight	1'720 kg	1'977 kg	2'400 kg

Vario retrofit only for	D 460 x 1000-DPA	D 460 x 1500-DPA	D 460 x 2000-DPA
Item No	340 2945	340 2946	340 2947
€ plus VAT	**3'390.00**	**3'390.00**	**3'390.00**

· Incl. Vario retrofit kit 400V · Incl. factory assembly
· Exchange digital position display DPA 2000 to DPA 2000S

- "Vario" type with frequency converter "Made in EU" with extreme high-torque and mostly constant torque progression

Scope of delivery

- 3-jaw chuck Ø 250 mm
- 4-jaw chuck Ø 300 mm with universally adjustable jaws
- Face clamping disc Ø 350 mm
- Reducing bush MT 6/MT 4
- 2 steady centres MT 4
- Steady rest passage up to Ø 160 mm
- Follow rest passage up to Ø 100 mm
- Digital position display DPA 2000
- Glass scales
- Machine base
- Spindle brake
- Splash board mounted
- Lathe chuck protection
- Threading gauge
- Quick-action tool holder
- Tool holder for square tools
- Coolant equipment
- Machine lamp
- Change gear kit
- Operating tool
- First filling with high-grade Mobil oil

Main spindle
- Hardened and ground
- Running in an oil quench
- Running on 2 adjustable precision taper roller bearings

Main spindle gearwheels
- Smooth running, hardened and ground

Fast acting feed gear
- Closed type
- Toothed wheels and shafts hardened and ground
- Running in an oil quench on precision bearings

Bed bridge
- The turning diameter is increased to 690 mm by taking out the bed bridge

Slide
- Handwheels with adjustable precision scaling of 0.04/0.02 mm
- Quick-action tool holder
- All guidings adjustable via V-ledges
- Chip protection at the top slide
- Central lubrication of the guideways
- Adjustment range top slide ± 90°

Digital position display
- Easy-to-operate
- Considerable reduction of the manufacturing times

Base frame and lathe bed
- Meehanite casting
- One-piece casting

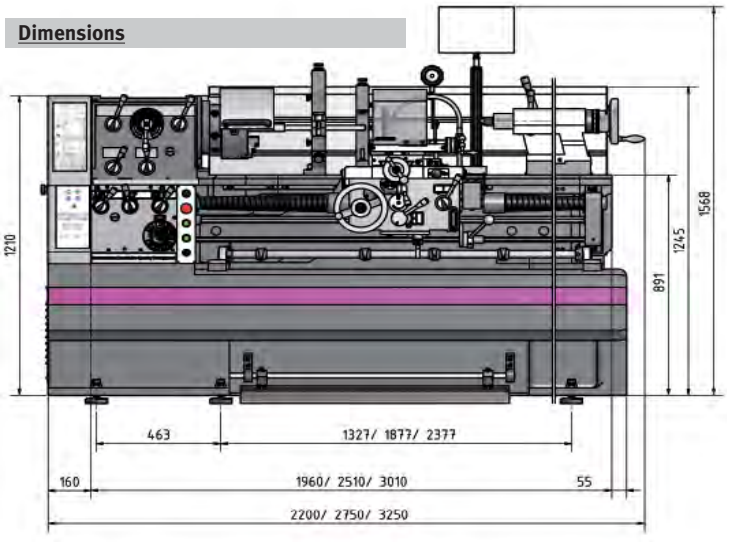
Tailstock
- Adjustable by ± 15 mm for taper turning
- Tailstock spindle sleeve and handwheel with adjustable precision scaling of 0.025 mm

Fig.: **D 460 x 1500**

Accessories	Item No	€ plus VAT
· ROHM 3-jaw chuck Ø 200 mm	344 1535	459.00
· ROHM 4-jaw chuck Ø 200 mm	344 1536	525.00
· ROHM 3-jaw chuck Ø 250 mm	344 4020	990.00
· ROHM 4-jaw chuck Ø 250 mm	344 4021	1'080.00
· ROHM Face clamping disc Ø 400 mm	344 4038	1'090.00
· Universal collet attachment 5C	344 4006	259.00
· Collet kit 3 - 25 mm, 17-pieces 5C	344 1509	300.00
· Lathe tool kit 20 mm, 7-pieces	344 4011	185.00
· Position limit stop 4-stage adjustable	344 4022	89.00
· Revolving centre MT 4	344 0704	60.00
· Machine stand reducing vibration SE2	338 1016	33.50
· Machine stand reducing vibration SE3	338 1018	39.00
· Spare tool holder type D for SWH 9	338 4332	289.00
· Spare tool holder type H for SWH 9	338 4333	399.00

Please find more accessories from page 84 on

Dimensions



New
including separate coolant tank

Heavy screw cutting and bar lathes which are distinguishing due to high flexibility, precision and economy
"VARIO" type with frequency converter "Made in EU"

- Hardened and ground bed guideways
- Camlock spindle seat ASA D1 - 8"
- Guaranteed true running accuracy of the spindle nose of less than 0.015 mm
- Clearly arranged gear selector levers to switch the feed speeds
- Central lubrication at the lathe slide
- Right-/left-handed rotation at the lathe slide, switchable via indexing spindle
- Mechanical longitudinal feed switch of the lathe slide with four adjustable cams
- Tailstock can be shifted by ± 15 mm for taper turning
- "Vario" type with frequency converter "Made in Germany" with extreme high-torque and mostly constant torque progression
- Cover for leading spindle
- Halogen machine lamp with articulated bracket supplied as standard
- Digital position display DPA 2000 for a precise measuring of the travels
- Mounted glass scales with an accuracy of 5 µm
- Quick-action tool holder with steel holder for square tools
- Coolant tank separate incl. level indicator and oil separator; for easy and complete draining and cleaning
- Coolant equipment with dosing and stop valve as standard
- Mechanical feet spindle brake
- Adjustable scale of the threading gauge
- Emergency-stop pushbutton, protective motor switch, lockable main switch
- "Vario" type with frequency monitoring avoiding malfunctions
- Acceptance certificate

Model	**D 560 x 1500-DPA**	**D 560 x 2000-DPA**	**D 560 x 3000-DPA**
Item No	340 2615DPA-C	340 2620DPA-C	340 2620DPA-C
€ plus VAT	**15'900.00**	**17'900.00**	**20'900.00**
Performance features			
Electrical connection			
Motor power		7.5 kW 400 V ~50 Hz	
Coolant equipment		100 W	
Machine data			
Centre height		280 mm	
Centre width	1'500 mm	2'000 mm	3'000 mm
Turning Ø over lathe bed		560 mm	
Turning Ø over cross slide		355 mm	
Turning Ø in the bed bridge		790 mm	
Length of bed bridge		270 mm	
Spindle speed		25 - 1'600 rpm	
Spindle speed Vario machines		10 - 1'600 rpm	
Number of steps		12 steps; for Vario infinitely variable	
Spindle taper		MT 7	
Spindle seat		Camlock ASA D1 - 8"	
Spindle hole		80 mm	
Bed width		350 mm	
Travel top slide		130 mm	
Travel cross slide		316 mm	
Tailstock seat		MT 5	
Tailstock - sleeve travel		180 mm	
Length infeed in the range of		0'059 - 1'646 mm/rev; 35 length infeeds	
Transverse feed in the range of		0'020 - 0'573 mm/rev; 35 transverse feeds	
Pitch - metric in the range of		0.2 - 14 mm/rev; 4 7 pitches	
Pitch - inch in the range of		112 - 2 threads/1"; 60 pitches	
Trapezoid thread in the range of		4 - 112; 50 trapezoid thread	
Modular thread in the range of		0.1 - 7; 3 4 modular thread	
Quadruple tool holder Seat height (max.)		25 x 25 mm	
Dimensions			
Length	2'840 mm	3'340 mm	4'340 mm
Width x height		1'150 x 1'460 mm	
Net weight	2'302 kg	2'720 kg	3'000 kg

Vario retrofit	**D 560 x 1500-DPA**	**D 560 x 2000-DPA**	**D 560 x 3000-DPA**
Item No	340 2955	340 2956	340 2957
€ plus VAT	**3'490.00**	**3'490.00**	**3'490.00**

· Incl. Vario retrofit kit 400V · Incl. factory assembly
· Exchange digital position display DPA 2000 to DPA 2000S

Main spindle
- Hardened, ground and running in an oil quench
- Running on 3 adjustable precision taper roller bearings

Main spindle gearwheels
- Smooth running, hardened and ground

Slide
- Precisely machined
- Adjustment range top slide ± 90°
- Oil-quenched shafts and wheels
- Handwheels with adjustable precision scaling of 0.04/0.02 mm
- Quick-action tool holder
- All guidings adjustable via V-ledges
- Chip protection at the top slide

Bed bridge
- Removable

Halogen machine lamp
- Concentrated halogen light
- Anodised round reflector with medium-width beam of light

Coolant equipment
- Position stable
- Dosing valve and stop valve

Tailstock
- Adjustable for taper turning
- Tailstock spindle sleeve and handwheel with adjustable precision scaling

Base frame and lathe bed
- Meehanite casting
- One-piece casting

Fig.: **D 560 x 1500-DPA**

Accessories	Item No	€ plus VAT
· 3-jaw chuck Ø 315 mm, D1 - 8" centrically and individually clamping jaws	344 4055	**539.00**
· Non-rigid block jaws for 3-jaw chuck Ø 315 mm	344 4056	**149.00**
· 4-jaw chuck Ø 400 mm, D1 - 8"	344 4051	**359.00**
· 4-jaw chuck Ø 325 mm Kombi	344 4052	**838.00**
· Flange for lathe chucks Ø 325 mm D 1-8 "	344 4042	**159.00**
· Revolving centre MT 5	344 0705	**79.00**
· Position limit stop 4-stage adjustable	344 4023	**99.00**
· Lathe tool kit HM 20 mm, 7-pieces	344 4011	**185.00**
· Machine stand reducing vibration SE3	338 1018	**39.00**
· Spare tool holder type D for SWH 9	338 4332	**289.00**
· Spare tool holder type H for SWH 9	338 4333	**399.00**

Please find more accessories from page 84 on

Scope of delivery
- Digital position display DPA 2000
- Glass scales
- 3-jaw chuck Ø 315 mm
- 4-jaw chuck Ø 400 mm with universally adjustable jaws
- Face clamping disc Ø 450 mm
- 2 steady centres MT 5
- Steady rest passage up to Ø max. 165 mm
- Follow rest passage up to Ø max. 95 mm
- Reducing bush MT 7/MT 5
- Machine base
- Spindle brake
- Splash board
- Lathe chuck protection
- Threading gauge
- Quick-action tool holder
- Tool holder for square tool
- Coolant equipment
- Machine lamp
- Change gear kit
- Operating tool
- First filling with high-grade Mobil oil

New in the product range

Heavy screw cutting and bar lathes which are outstanding due to high flexibility, precision and economy

- Hardened and ground bed guideways
- Camlock spindle seat ASA D 1 - 8“
- Closed fast acting feed gear, toothed wheels and shafts hardened and ground, running in precision bearings
- Clearly arranged gear selector levers to switch the feed speeds
- Central lubrication at the lathe slide
- Right-/left-handed rotation at the lathe slide, switchable via indexing spindle
- Tailstock can be shifted by ± 13 mm for taper turning
- Emergency-stop pushbutton, protective motor switch, lockable main switch
- Cover for leading spindle
- Halogen machine lamp with articulated arm supplied as standard
- Coolant equipment with dosing and stop valve as standard
- Mechanical feet spindle brake
- Incl. Siemens electronic
- Acceptance certificate
- Digital position indication DPA 2000
- Glass scales
- Quick-action tool holder SWH 9
- “Vario” type with frequency monitoring avoiding malfunctions
- "Vario" type with frequency converter “Made in EU” with extreme high-torque and mostly constant torque progression

Model	**D 660 x 2000-DPA**	**D 660 x 3000-DPA**
Item No	340 2720 DPA	340 2730 DPA
€ plus VAT	**22’900.00**	**24’900.00**
Performance features		
Electrical connection		
Motor power	7.5 kW 400 V ~50 Hz	
Machine data		
Centre height	330 mm	
Centre width	2’000 mm	3’000 mm
Turning Ø over lathe bed	660 mm	
Turning Ø without bed bridge	900 mm	
Distance between centres bed bridge	250 mm	
Turning Ø over cross slide	440 mm	
Spindle speed	25 - 1’600 rpm	
Spindle speed Vario	10 - 1’600 rpm	
Number of steps	16 steps	
Spindle taper	MT 7	
Spindle seat	Camlock ASA D 1 - 8”	
Spindle hole	105 mm	
Bed width	400 mm	
Top slide travel	230 mm	
Cross slide travel	368 mm	
Tailstock taper	MT 5	
Tailstock - sleeve travel	235 mm	
Length infeed in the range of	0’044/1.48 mm/rev; 25 length infeeds	
Transverse feed in the range of	0’022/0.74 mm/rev; 25 transverse feeds	
Thread pitch - metric	0.45/120 mm/rev; 54 pcs. thread pitches	
Pitch - inch in the range of	80 - 7 threads/1“; 60 pcs. thread pitches	
Trapezoid thread in the range of	7/8 - 160 D.P.; 42 trapezoid threads	
Modular thread in the range of	0.25 - 60 M.P ; 46 modular thread	
Quick-action tool holder		
Seat height (max.)	32 mm	
Dimensions		
Length	3’650 mm	4’650 mm
Width x height	1’230 x 1’595 mm	
Net weight	2’900 kg	3’300 kg

Scope of delivery

- 3-jaw chuck Ø 315 mm / D1-8
- 4-jaw chuck Ø 400 mm / D1-8
- Surface disc Ø 450mm / D1-8
- Reducing bush MT 7/MT 5
- 2 steady centres MT 5
- Steady rest passage up to Ø max. 150 mm
- Follow rest passage up to Ø max. 80 mm
- Machine base
- Spindle brake
- Splash board
- Coolant equipment
- Machine lamp
- Operating tool
- Change gear kit
- First filling with high-grade Mobil oil

Vario retrofit	**D 660 x 2000-DPA**	**D 660 x 3000-DPA**
Item No	340 2966	340 2967
€ plus VAT	**3’590.00**	**3’590.00**

· Incl. Vario retrofit kit 400V · Incl. factory assembly
· Exchange digital position display DPA 2000 to DPA 2000S

Accessories	Item No	**€ plus VAT**
· Machine stand reducing vibrationSE 3	338 1018	**39.00**
· Tool holder type D	338 4332	**289.00**
· Tool holder type H	338 4333	**399.00**

Main spindle
- Hardened and ground
- Running on 3 adjustable precision taper roller bearings
- Smooth-running main spindle gear wheels, hardened and ground

Slide
- Precisely machined
- Top slide rotatable by 360°
- Oil-quenched shafts and wheels
- Handwheels with adjustable precision scaling of 0.04/0.02 mm
- Quick-action tool holder
- All guidings adjustable via V-ledges
- Chip protection at the top slide

Digital position indication DPA 2000
- High working accuracy
- Error rate is reduced
- Easy-to-operate

Tailstock
- Adjustable by ± 13 mm for taper turning
- Tailstock spindle sleeve and handwheel with adjustable precision scaling

Base frame and lathe bed
- Meehanite casting
- One-piece casting

Bed bridge
- Removable

Coolant equipment
- with dosing valve and stop valve

Halogen machine lamp
- in an aluminium housing

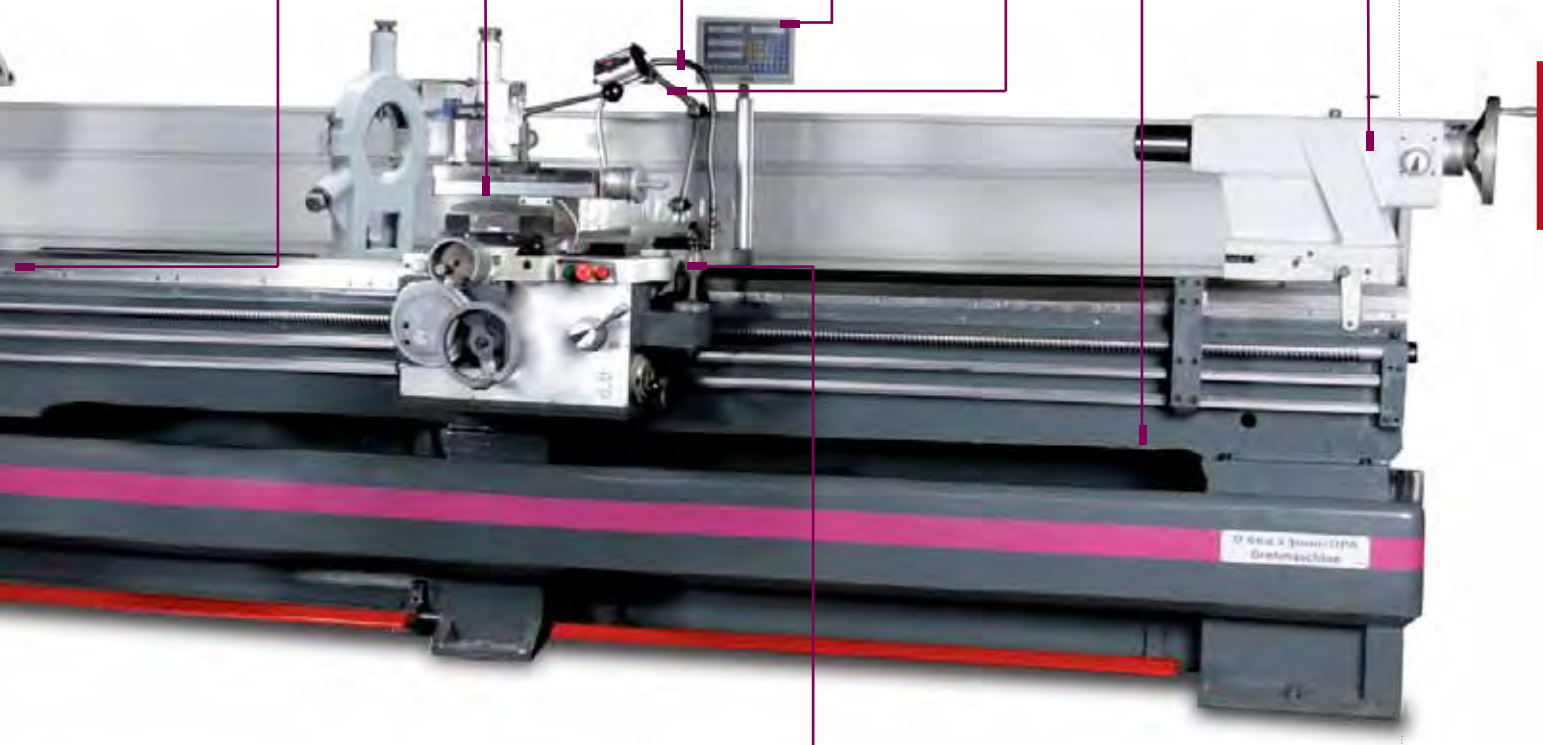
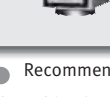


Fig.: **D 660 x 2000-DPA**

Coolant tank
- Separate with level indicator and oil separator
- Easy and complete draining and cleaning

Fast motion
- Pushbutton and selector lever to activate the rapid motion for transverse and longitudinal direction
- For even more efficient working

Please find more accessories from page 84 on



Accessories for turning		D140	D180	D210	D240	D250	D280	D320	D330	D360	D420	D460	D560	D660
Face clamping disc Ø 170 mm	344 0295	—	●	—	—	—	—	—	—	—	—	—	—	
Face clamping disc Ø 200 mm	344 0352	—	—	●	—	—	—	—	—	—	—	—	—	—
Face clamping disc Ø 240 mm	344 1352	—	—	—	●	—	—	—	—	—	—	—	—	—
Face clamping disc Ø 250 mm	344 0552	—	—	—	—	●	—	—	—	—	—	—	—	—
Face clamping disc Ø 265 mm	344 1452	—	—	—	—	—	●	—	—	—	—	—	—	—
Röhn face clamping disc Ø 260 mm	344 1538	—	—	—	—	—	—	●	●	●	—	—	—	—
Röhn face clamping disc Ø 400 mm	344 4038	—	—	—	—	—	—	—	—	—	●	●	—	—
Flange for lathe chucks Ø160 mm Camlock D1-4“	344 1512	—	—	—	—	—	—	●	●	●	—	—	—	—
Flange for lathe chucks Ø200 mm Camlock D1-4“	344 1513	—	—	—	—	—	—	●	●	●	—	—	—	—
Flange for lathe chucks Ø200 mm Camlock D1-6“	344 4012	—	—	—	—	—	—	—	—	—	●	●	—	—
Flange for lathe chucks Ø250 mm Camlock D1-6“	344 4013	—	—	—	—	—	—	—	—	—	—	●	—	—
Flange for lathe chucks Ø315 mm Camlock D1-8“	344 4041	—	—	—	—	—	—	—	—	—	—	—	●	●
Flange for lathe chucks Ø100 mm	344 0312	—	●	●	—	—	—	—	—	—	—	—	—	—
Flange for lathe chucks Ø125 mm	344 1311	—	—	—	●	—	●	—	—	—	—	—	—	—
Flange for lathe chucks Ø125 mm	344 0511	—	—	—	—	●	—	—	—	—	—	—	—	—
Flange for lathe chucks Ø125 mm	344 0313	—	—	●	—	—	—	—	—	—	—	—	—	—
Flange for lathe chucks Ø160 mm	344 1413	—	—	—	—	—	●	—	—	—	—	—	—	—
Collet chuck ER16	344 0281	●	—	—	—	—	—	—	—	—	—	—	—	—
Collet chuck ER25	344 1305	—	—	—	●	—	●	—	—	—	—	—	—	—
Collet chuck ER25	344 0305	—	●	●	—	—	—	—	—	—	—	—	—	—
Collet chuck ER25	344 0505	—	—	—	—	●	—	—	—	—	—	—	—	—
Collet chuck ER32	344 1306	—	—	—	●	—	●	—	—	—	—	—	—	—
Collet chuck ER32	344 0306	—	●	●	—	—	—	—	—	—	—	—	—	—
Collet chuck ER32	344 0506	—	—	—	—	●	—	—	—	—	—	—	—	—
Röhn revolving centre MT2	344 1003	—	●	●	●	●	●	—	—	—	—	—	—	—
Röhn revolving centre MT3	344 1503	—	—	—	—	—	—	●	●	●	—	—	—	—
Röhn revolving centre MT4	344 4003	—	—	—	—	—	—	—	—	—	●	●	—	—
quantum revolving centre MT2	344 0702	—	●	●	●	●	●	—	—	—	—	—	—	—
quantum revolving centre MT3	344 0703	—	—	—	—	—	—	●	●	●	—	—	—	—
quantum revolving centre MT4	344 0704	—	—	—	—	—	—	—	—	—	●	●	—	—
quantum revolving centre MT5	344 0705	—	—	—	—	—	—	—	—	—	—	—	●	●
Collet kit 5C	344 1509	—	—	—	—	—	—	●	●	●	●	●	●	—
Collet kit ER 16	344 0282	●	—	—	—	—	—	—	—	—	—	—	—	—
Collet kit ER 25	344 1109	—	●	●	●	●	●	—	—	—	—	—	—	—
Collet kit ER 32	344 1122	—	●	●	●	●	●	—	—	—	—	—	—	—
Change revolving centre MT2	344 0732	—	●	●	●	●	●	—	—	—	—	—	—	—
Change revolving centre MT3	344 0733	—	—	—	—	—	—	●	●	●	—	—	—	—
Change revolving centre MT4	344 0734	—	—	—	—	—	—	—	—	—	●	●	●	—
Vibration absorber SE 1	338 1012	●	●	●	●	●	—	—	—	—	—	—	—	—
Vibration absorber SE 2	338 1016	—	—	—	—	—	●	●	●	●	●	●	—	—
Vibration absorber SE 3	338 1018	—	—	—	—	—	—	—	—	—	—	—	●	●
Universal coolant equipment 230 V	335 2002	●	●	●	●	●	●	●	●	●	●	●	●	●
Universal coolant equipment 400 V	335 2001	—	—	○	○	○	●	●	●	●	●	●	●	●
Titanium twist drill kit	305 1010	●	●	●	●	●	●	●	●	●	●	●	●	●
Twist drill HSS MT2	305 1002	●	●	●	●	●	●	—	—	—	—	—	—	—
Twist drill HSS MT3	305 1003	—	—	—	—	—	—	●	●	●	○	○	○	●
Clamping block CB1 / Cutting-off bracing CH1	344 0680-5	—	—	—	—	—	—	○	○	○	●	●	●	—
Steady rest	344 0294	—	●	—	—	—	—	—	—	—	—	—	—	—
Steady rest	344 1415	—	—	—	—	—	●	—	—	—	—	—	—	—
Steady rest	344 0315	—	—	●	—	—	—	—	—	—	—	—	—	—
Steady rest	344 1315	—	—	—	●	—	—	—	—	—	—	—	—	—
Steady rest	344 0515	—	—	—	—	●	—	—	—	—	—	—	—	—
Follow rest	344 0283	●	—	—	—	—	—	—	—	—	—	—	—	—
Follow rest	344 0293	—	●	—	—	—	—	—	—	—	—	—	—	—
Follow rest	344 1310	—	—	—	●	—	—	—	—	—	—	—	—	—
Follow rest	344 0310	—	—	●	—	—	—	—	—	—	—	—	—	—
Follow rest	344 0510	—	—	—	—	●	—	—	—	—	—	—	—	—
Follow rest	344 1410	—	—	—	—	—	●	—	—	—	—	—	—	—
Universal collet attachment 5C	344 1506	—	—	—	—	—	—	●	●	●	—	—	—	—
Universal collet attachment 5C	344 1507	—	—	—	—	—	—	—	—	—	●	—	—	—
Universal collet attachment 5C	344 4006	—	—	—	—	—	—	—	—	—	—	●	—	—
Position limit stop with fine adjustment	344 1524	—	—	—	—	—	—	●	●	●	—	—	—	—
Position limit stop 4-fold	344 4022	—	—	—	—	—	—	—	—	—	—	●	—	—
Position limit stop 4-fold	344 4023	—	—	—	—	—	—	—	—	—	—	—	●	—
Digital measuring system MPA3-S	338 3902	—	●	●	●	●	●	—	—	—	—	—	—	—
Digital measuring system MPA3-L	338 3904	—	—	—	—	—	—	●	●	●	—	—	—	—

● Recommended ○ Partly recommended — Not recommended

This table of accessories includes all recommended options of accessories. Depending on the individual case it may however be practical to use other accessories.

	Accessories for turning		D140	D180	D210	D240	D250	D280	D320	D330	D360	D420	D460	D560	D660
SWH	SWH AA	338 4311	—	●	—	—	—	—	—	—	—	—	—	—	—
	SWH 1-A	338 4301	—	—	●	●	●	●	—	—	—	—	—	—	—
	SWH 3 - E	338 4303	—	—	—	—	—	—	●	●	●	—	—	—	—
	SWH 5 - B	338 4305	—	—	—	—	—	—	—	—	—	●	●	—	—
	SWH 7 - C	338 4307	—	—	—	—	—	—	—	—	—	—	—	●	—
Lathe tool	Lathe tool HM 8 mm	344 1011	●	●	●	●	●	●	—	—	—	—	—	—	—
	Lathe tool HM 10 mm	344 1111	—	●	●	●	●	●	—	—	—	—	—	—	—
	Lathe tool HM 12 mm	344 1211	—	—	●	●	●	●	—	—	—	—	—	—	—
	Lathe tool HM 16 mm	344 1511	—	—	—	—	—	—	●	●	●	—	—	—	—
	Lathe tool HM 20 mm	344 4011	—	—	—	—	—	—	—	—	—	●	●	●	—
	Lathe tool with soldered HM 8 mm	344 1008	●	●	●	●	●	●	—	—	—	—	—	—	—
	Lathe tool with soldered HM 10 mm	344 1108	—	●	●	●	●	●	—	—	—	—	—	—	—
	Lathe tool with soldered HM 16 mm	344 1508	—	—	—	—	—	—	●	●	●	—	—	—	—
3-jaw chuck	3-jaw chuck Ø 80 mm	344 0287	●	—	—	—	—	—	—	—	—	—	—	—	—
	3-jaw chuck Ø 100 mm	344 0710	—	●	●	—	—	—	—	—	—	—	—	—	—
	3-jaw chuck Ø 125 mm	344 0712	—	—	—	●	●	●	—	—	—	—	—	—	—
	3-jaw chuck Ø 160 mm	344 0715	—	—	—	—	—	●	●	●	●	—	—	—	—
	3-jaw chuck Ø 200 mm	344 0718	—	—	—	—	—	—	●	●	●	●	●	—	—
	3-jaw chuck Ø 250 mm	344 0723	—	—	—	—	—	—	—	—	—	●	●	—	—
	3-jaw chuck Ø 315 mm	344 0724	—	—	—	—	—	—	—	—	—	—	—	●	●
	Röhn 3-jaw chuck Ø 100 mm	344 1010	—	●	●	—	—	—	—	—	—	—	—	—	—
	Röhn 3-jaw chuck Ø 125 mm	344 1025	—	—	—	●	●	●	—	—	—	—	—	—	—
	3-jaw chuck Camlock ø 160 mm D1-4	344 0716	—	—	—	—	—	—	●	●	●	—	—	—	—
	3-jaw chuck Camlock ø 200 mm D1-4	344 0720	—	—	—	—	—	—	●	●	●	—	—	—	—
	3-jaw chuck Camlock ø 200 mm D1-6	344 0722	—	—	—	—	—	—	—	—	—	●	●	—	—
	3-jaw chuck Camlock ø 250 mm D1-6	344 0725	—	—	—	—	—	—	—	—	—	●	●	—	—
	3-jaw chuck Camlock ø 315 mm D1-8	344 4055	—	—	—	—	—	—	—	—	—	—	—	●	—
	Röhn 3-jaw chuck Camlock ø 160 mm D1-4	344 1528	—	—	—	—	—	—	●	●	●	—	—	—	—
	Röhn 3-jaw chuck Camlock ø 200 mm D1-4	344 1531	—	—	—	—	—	—	●	●	●	—	—	—	—
	Röhn 3-jaw chuck Camlock ø 200 mm D1-6	344 1535	—	—	—	—	—	—	—	—	—	●	●	—	—
	Röhn 3-jaw chuck Camlock ø 250 mm D1-6	344 4020	—	—	—	—	—	—	—	—	—	●	●	—	—
4-jaw chuck	4-jaw chuck Ø 80 mm, individual	344 0288	●	—	—	—	—	—	—	—	—	—	—	—	—
	4-jaw chuck Ø 100 mm, individual	344 0709	—	●	●	—	—	—	—	—	—	—	—	—	—
	4-jaw chuck Ø 125 mm, individual	344 0714	—	—	—	●	●	●	—	—	—	—	—	—	—
	4-jaw chuck Ø 160 mm, combined, individual	344 0717	—	—	—	—	—	●	●	●	●	—	—	—	—
	4-jaw chuck Ø 200 mm, combined, individual	344 0721	—	—	—	—	—	—	●	●	●	●	●	—	—
	4-jaw chuck Ø 250 mm, combined, individual	344 0726	—	—	—	—	—	—	—	—	—	●	●	—	—
	4-jaw chuck Ø 315 mm, combined, individual	344 4052	—	—	—	—	—	—	—	—	—	—	—	●	—
	4-jaw chuck Ø 100 mm, centrical	344 0711	—	●	—	—	—	—	—	—	—	—	—	—	—
	4-jaw chuck Ø 125 mm, centrical	344 0713	—	—	—	●	●	●	—	—	—	—	—	—	—
	4-jaw chuck Ø 160 mm, centrical	344 0727	—	—	—	—	—	●	●	●	●	—	—	—	—
	4-jaw chuck Ø 200 mm, centrical	344 0728	—	—	—	—	—	—	●	●	●	●	●	—	—
	4-jaw chuck Ø 250 mm, centrical	344 0729	—	—	—	—	—	—	—	—	—	●	●	—	—
	4-jaw chuck Ø 315 mm, centrical	344 0730	—	—	—	—	—	—	—	—	—	—	—	●	—
	Röhn 4-jaw chuck Ø 100 mm, centrical	344 1012	—	—	●	—	—	—	—	—	—	—	—	—	—
	Röhn 4-jaw chuck Ø 125 mm, centrical	344 1027	—	—	●	●	●	—	—	—	—	—	—	—	—
	4-jaw chuck Camlock ø 160 mm D1-4	344 1529	—	—	—	—	—	—	●	●	●	—	—	—	—
	4-jaw chuck Camlock ø 200 mm D1-4	344 1532	—	—	—	—	—	—	●	●	●	—	—	—	—
	4-jaw chuck Camlock ø 200 mm D1-6	344 1536	—	—	—	—	—	—	—	—	—	●	●	●	—
	4-jaw chuck Camlock ø 250 mm D1-6	344 4021	—	—	—	—	—	—	—	—	—	●	●	●	—
	4-jaw chuck Camlock ø 400 mm D1-8	344 4051	—	—	—	—	—	—	—	—	—	—	—	●	●

● Recommended — Not recommended

This table of accessories includes all recommended options of accessories. Depending on the individual case it may however be practical to use other accessories.

3-jaw chuck

OPTIMUM® 3-jaw chuck centric clamping

- **Incl. interchangeable jaws** · True running acc. of less than 0.05 mm
- With cylindrical centring according to DIN 6350
- Flange for lathe chucks required · Without assembly

ø 80 mm	344 0287	**71.00**
ø 100 mm	344 0710	**85.00**
ø 125 mm	344 0712	**95.00**
ø 160 mm	344 0715	**145.00**
ø 200 mm	344 0718	**189.00**
ø 250 mm	344 0723	**239.00**
ø 315 mm Kombi	344 0724	**399.00**

RÖHM 3-jaw chuck centric clamping

- **With reversible jaws** · True running accuracy of less than 0.05 mm
- With cylindrical centring according to DIN 6350
- Flange for lathe chucks required · Without assembly

ø 100 mm	344 1010	**269.00**
ø 125 mm	344 1025	**295.00**

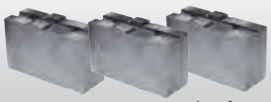
RÖHM ø 125 mm

Optimum ø 125 mm

Non-rigid block jaw kit

· For Optimum 3-jaw chuck · one-piece3 jaws included in each kit

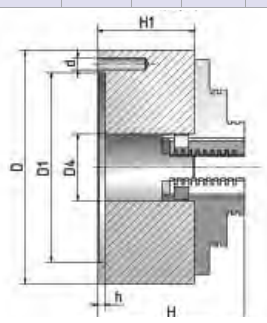
ø 100 mm	344 0810	**55.00**
· for chuck Item No: 344 0710 · one-piece		
ø 125 mm	344 0812	**59.00**
· for chuck Item No: 344 0712 · one-piece		
ø 315 mm	344 4056	**139.00**
· for chuck Item No: 344 0724 / 344 4055 · Jaw insert		

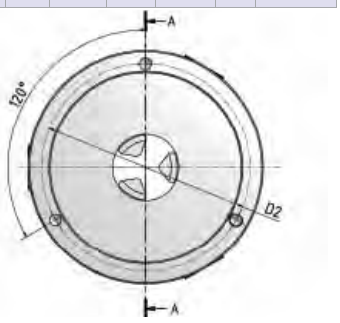


Jaw insert

One-piece

Technical data	Item No	D	D1	D2	D4	d	H	H1	h	Speed
ø 80 mm	344 0287	80	55	66	16	M6	66	50	3	4'000
ø 100 mm	344 0710	100	72	84	22	M8	75	55	3	3'500
ø 125 mm	344 0712	125	95	108	30	M8	84	58	3	3'000
ø 160 mm	344 0715	160	130	140	40	M8	93	65	5	2'500
ø 200 mm	344 0718	200	165	180	60	M10	110	75	6.6	2'000
ø 250 mm	344 0723	250	206	226	80	M12	121	80	5.5	1'600
ø 315 mm	344 0724	315	260	285	100	M16	141	90	6	875
ø 100 mm	344 1010	100	70	83	20	M8	68	50	3	4'200
ø 125 mm	344 1025	125	95	108	32	M8	80	56	4	3'800





3-jaw chuck Camlock

OPTIMUM® 3-jaw chuck Camlock centric clamping

- **With reversible jaws** DIN 55029 · ASA B 5.9 D1 · ISO 702/II
- True running accuracy of less than 0.05 mm
- Without assembly

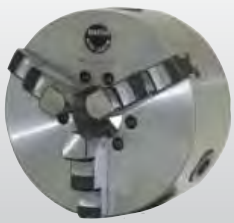
ø 160 mm Camlock ASA D1 - 4"	344 0716	**145.00**
ø 200 mm Camlock ASA D1 - 4"	344 0720	**209.00**
ø 200 mm Camlock ASA D1 - 6"	344 0722	**209.00**
ø 250 mm Camlock ASA D1 - 6"	344 0725	**269.00**
ø 315 mm Camlock ASA D1 - 8" Kombi	344 4055	**539.00**

RÖHM 3-jaw chuck Camlock centric clamping

- **With reversible jaws** · DIN 55029 · ASA B 5.9 D1 · ISO 702/II
- True running accuracy of less than 0.05 mm
- Without assembly

ø 160 mm Camlock ASA D1 - 4"	344 1528	**389.00**
ø 200 mm Camlock ASA D1 - 4"	344 1531	**429.00**
ø 200 mm Camlock ASA D1 - 6"	344 1535	**459.00**
ø 250 mm Camlock ASA D1 - 6"	344 4020	**990.00**

RÖHM ø 200 mm Camlock D 1-4



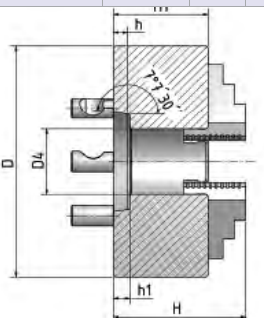
Optimum ø 250 mm Camlock D1 - 6"

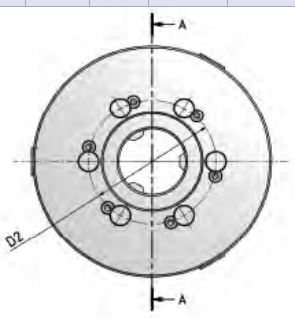
Non-rigid block jaw kit

· For Optimum 3-jaw chuck · one-piece · 3 jaws included in each kit

ø 160 mm Camlock D1-4"	344 0816	**70.00**
· for chuck Item No: 344 0716/344 0715		
ø 200 mm Camlock D1-4"/D1 - 6"	344 0820	**85.00**
· for chuck Item No: 344 0720/344 0722/344 0718		
ø 250 mm Camlock D1-6"	344 0825	**90.00**
· for chuck Item No: 344 0725/344 0724		

Technical data	Item No	D	D2	D4	H	H1	Speed
ø 160 mm D1-4"	344 0716	160	82.5	40	100	70	2'500
ø 200 mm D1-4"	344 0720	200	82.6	50	120	86	2'000
ø 200 mm D1-6"	344 0722	200	133.4	60	128	92	2'000
ø 250 mm D1-6"	344 0725	250	133.4	70	140	101	1'600
ø 315 mm D1-8"	344 4055	315	171.4	100	180	110	875
ø 160 mm D1-4"	344 1528	160	82.6	42	92	66	3'400
ø 200 mm D1-4"	344 1531	200	82.6	55	107	74.5	2'800
ø 200 mm D1-6"	344 1535	200	133.4	55	107	74.5	2'800
ø 250 mm D1-6"	344 4020	250	133.4	76	123	83	2'500





4-jaw chuck

OPTIMUM® 4-jaw chuck individually and/or centric clamping

- With cylindrical centring according to DIN 6350
- Inclusive key for chucks · True running accuracy of less than 0.05 mm
- Flange for lathe chucks required · Without assembly

individually clamping		
ø 72 mm	344 0288	**67.00**
ø 100 mm	344 0709	**75.00**
ø 125 mm	344 0714	**89.00**
ø 160 mm Kombi (individually and centric clamping)	344 0717	**369.00**
ø 200 mm Kombi (individually and centric clamping)	344 0721	**490.00**
ø 250 mm Kombi (individually and centric clamping)	344 0726	**549.00**
ø 325 mm Kombi (individually and centric clamping)	344 4052	**838.00**

centric clamping		
ø 100 mm	344 0711	**119.00**
ø 125 mm	344 0713	**135.00**
ø 160 mm	344 0727	**155.00**
ø 200 mm	344 0728	**195.00**
ø 250 mm	344 0729	**239.00**
ø 315 mm	344 0730	**440.00**

RÖHM 4-jaw chuck centric clamping

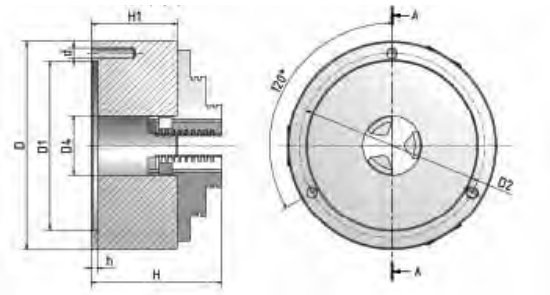
- With cylindrical centring according to DIN 6350
- Inclusive key for chucks · True running accuracy less than 0.05 mm
- Flange for lathe chucks required · Without assembly

ø 100 mm	344 1012	**299.00**
ø 125 mm	344 1027	**330.00**

RÖHM ø 100 mm

Optimum ø 125 mm

Technical data	Item No	D	D1	D2	D4	d	H	H1	h	Speed
ø 72 mm	344 0288	72	22	35	15	M5	33	25	6.3	3'000
ø 100 mm	344 0709	100	72	84	24	M8	77	54	4	3'500
ø 125 mm	344 0714	125	95	108	30	M8	84.5	58	3.5	3'000
ø 160 mm	344 0717	160	130	142	42	M8	115	87	5	2'500
ø 200 mm	344 0721	200	165	180	65	M10	127	97	5	2'000
ø 250 mm	344 0726	250	206	226	80	M12	142	102	5	1'600
ø 325 mm	344 4052	325	225	272	135	M16	163	120	5	1'200
ø 100 mm	344 0711	100	72	84	22	M8	75.2	55	3.4	3'440
ø 125 mm	344 0713	125	95	108	30	M8	84.5	58	3.5	2'750
ø 160 mm	344 0727	160	130	180	60	M8	93	65	5	2'150
ø 200 mm	344 0728	200	165	180	60	M10	110	75	6.6	1'800
ø 250 mm	344 0729	250	206	226	80	M12	121	80	5.5	1'400
ø 315 mm	344 0730	315	260	285	100	M16	141	90	6	875
ø 100 mm	344 1012	100	70	83	20	M8	67.5	50	3	4'200
ø 125 mm	344 1027	125	95	108	32	M8	80	56	4	3'800



4-jaw chuck Camlock

RÖHM 4-jaw chuck Camlock centric clamping

- DIN 55029 · ASA B 5.9 D1 · ISO 702/II
- True running accuracy of less than 0.05 mm
- Including key for chucks and Camlock bolt · Without assembly

ø 160 mm Camlock ASA D1 - 4"	344 1529	**429.00**
ø 200 mm Camlock ASA D1 - 4"	344 1532	**479.00**
ø 200 mm Camlock ASA D1 - 6"	344 1536	**525.00**
ø 250 mm Camlock ASA D1 - 6"	344 4021	**1'080.00**

OPTIMUM® 4-jaw chuck Camlock individually clamping

ø 400 mm Camlock ASA D1 - 8"	344 4051	**359.00**

RÖHM ø 200 mm
Camlock D 1-4

Optimum ø 250 mm
Camlock D1 - 6"

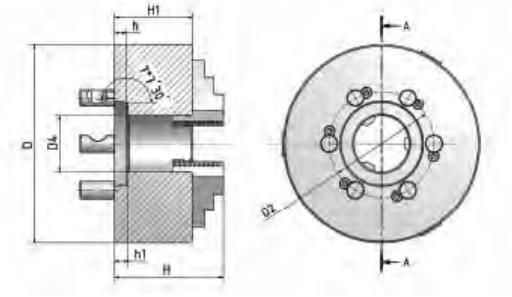
Non-rigid block jaw kit

· For Optimum 4-jaw chuck · one-piece · 4 jaws included in each kit

ø 100 mm (for chuck Item No: 344 0709)	344 0832	**45.00**
ø 100 mm (for chuck Item No: 344 0711)	344 0833	**45.00**
ø 125 mm (for chuck Item No: 344 0713)	344 0836	**49.00**
ø 125 mm (for chuck Item No: 344 0714)	344 0837	**49.00**
ø 160 mm (for chuck Item No: 344 0717)	344 0840	**79.00**
ø 160 mm (for chuck Item No: 344 0727)	344 0841	**59.00**
ø 200 mm (for chuck Item No: 344 0721)	344 0842	**99.00**
ø 200 mm (for chuck Item No: 344 0728)	344 0843	**69.00**
ø 250 mm (for chuck Item No: 344 0726)	344 0846	**119.00**
ø 250 mm (for chuck Item No: 344 0729)	344 0847	**89.00**
ø 325 mm (for chuck Item No: 344 0752)	344 0850	**139.00**
ø 315 mm (for chuck Item No: 344 0730)	344 0851	**159.00**
ø 400 mm (for chuck Item No: 344 4051)	344 0855	**169.00**

Not possible for combined chucks

Technical data	Item No	D	D2	D4	H	H1	Speed
ø 400 mm D1-8"	344 4051	400	170	125	140	83	150
ø 160 mm D1-4"	344 1529	160	82.5	42	95	92	3'400
ø 200 mm D1-4"	344 1532	200	82.6	55	107	66	2'800
ø 200 mm D1-6"	344 1536	200	133.4	55	107	74.5	2'800
ø 250 mm D1-6"	344 4021	250	133.4	76	123	74.5	2'500



Turning

Face clamping disc	Item No	€ plus VAT
ø 170 mm (D 180)	344 0294	**35.00**
ø 200 mm (D 210)	344 0352	**50.00**
ø 240 mm (D 240)	344 1352	**50.00**
ø 250 mm (D 250)	344 0552	**50.00**
ø 265 mm (D 280)	344 1452	**60.00**

RÖHM face clamping disc		
ø 260 mm (D 320 - D 360)	344 1538	**555.00**
ø 400 mm (D 420 - D 460)	344 4038	**1'090.00**

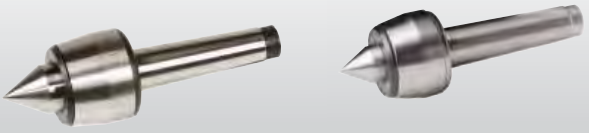
Lathe chuck flange		
· To assemble the lathe chuck		
Ø **160 mm** Camlock D1 - 4"	344 1512	**85.00**
· for lathe chuck 344 0717		
Ø **200 mm** Camlock D1 - 4"	344 1513	**99.00**
· for lathe chuck 344 0721		
Ø **200 mm** Camlock D1 - 6"	344 4012	**119.00**
· for lathe chuck 344 0721		
Ø **250 mm** Camlock D1 - 6"	344 4013	**129.00**
· for lathe chuck 344 0726		
Ø **315 mm** Camlock D1 - 8"	344 4041	**149.00**
· for lathe chuck 344 0724/344 0730		
Ø **325 mm** Camlock D1 - 8"	344 4042	**159.00**
· for lathe chuck 344 4052		

Lathe chuck flange		
· To assemble the lathe chuck		
Ø **100 mm**	344 0312	**70.00**
cylindrical (D 180/D 210)		
Ø **125 mm**	344 1312	**65.00**
short taper (D 240 Vario/D 280 Vario) for 3-jaw lathe chuck		
Ø **125 mm**	344 1313	**65.00**
short taper (D 240 Vario/D 280 Vario) for 4-jaw lathe chuck		
Ø **125 mm**	344 0511	**70.00**
cylindrical (D 250)		
Ø **125 mm**	344 0313	**70.00**
(D 210)		
Ø **160 mm**	344 1413	**79.00**
short taper (D 280)		

Collet chuck	Item No	€ plus VAT
· With short taper holding fixture		
ER 16	344 0281	**39.00**
(D 140)		
ER 25	344 1305	**90.00**
short taper (D 240/D 280)		
ER 25	344 0305	**70.00**
cylindrical (D 180/D 210)		
ER 25	344 0505	**80.00**
cylindrical (D 250)		
ER 32	344 1306	**99.00**
short taper (D 240/D 280)		
ER 32	344 0306	**79.00**
cylindrical (D 180/D 210)		
ER 32	344 0506	**90.00**
cylindrical (D 250)		

RÖHM revolving centre		
MT 2	344 1003	**75.00**
MT 3	344 1503	**79.00**
MT 4	344 4003	**99.00**

quantum revolving centre		
max. out-of-run 0.006 mm		
MT 1	344 0701	**35.00**
Speed max. 5'000 rpm; radial load max. 320 N		
MT 2	344 0702	**45.00**
Speed max. 5'000 rpm; radial load max. 400 N		
MT 3	344 0703	**50.00**
Speed max. 4'500 rpm; radial load max. 800 N		
MT 4	344 0701	**60.00**
Speed max. 3'500 rpm; radial load max. 1'250 N		
MT 5	344 0705	**79.00**
Speed max. 3'000 rpm; radial load max. 1'500 N		
MT 6	344 0706	**179.00**
Speed max. 2'500 rpm; radial load max. 1'800 N		

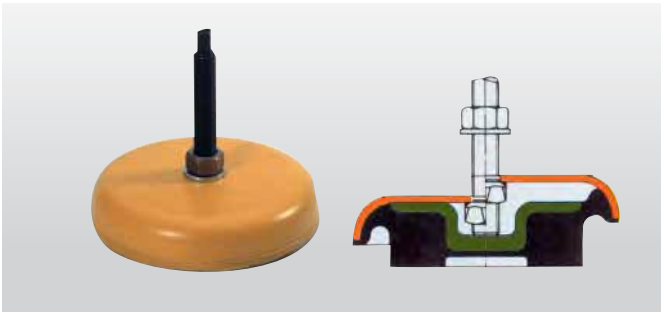


Revolving centre with replacement lathe centres		
· With 7 replaceable lathe centres		
· Body made of hardened and ground tool steel		
· Precision needle roller bearings ensure high true running accuracy		
MT 2	344 0732	**120.00**
MT 3	344 0732	**140.00**
MT 4	344 0734	**150.00**

Vibration absorber machine stand	Item No	€ plus VAT
· Machines and devices can be installed without anchoring and can be exactly leveled by height adjustment		
· Machine capability will be improved due to shock and vibration absorbing		
SE 1	338 1012	**22.00**
SE 2	338 1016	**33.50**
SE 3	338 1018	**39.00**

SE3 NEW

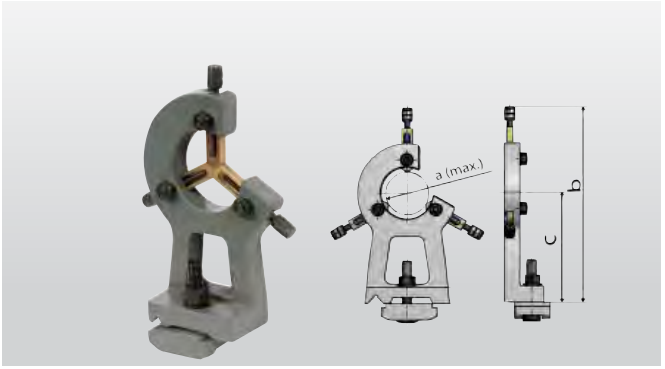
Load	SE 1	SE 2	SE 3
Item No	338 1012	338 1016	338 1018
€ plus VAT	**21.00**	**32.00**	**39.00**
Milling machines	340 Kg	460 kg	1'600 kg
Saws/ general machines	570 kg	1'460 kg	3'500 kg
Thread	M12	M 16	M 20
Foot Ø/Foot height	120/32	160/35	185/39



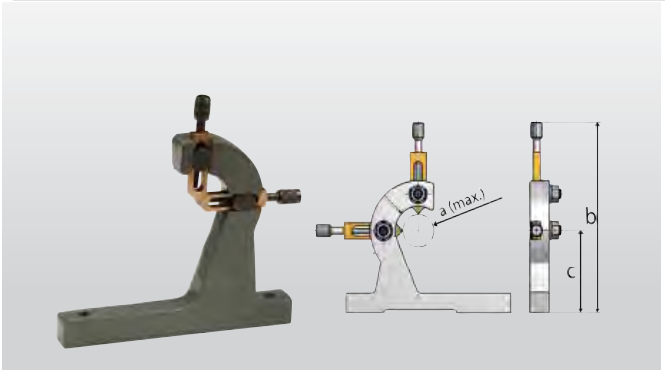
Collet kit SPZ - 5C	344 1509	**300.00**
· For universal collet attachment		
· Standard 385 E		
· 17- pcs, clamping range 3 - 25mm		
· Wooden box		

Collet kit		
· DIN 6499		
SPZ - ER 16	344 0282	**179.00**
· 12-pcs, clamping range ø 1 - 12 mm		
· Wooden box		
SPZ - ER 25	344 1109	**149.00**
· 15-pcs, clamping range ø 1 - 16 mm		
· Plastic box		
SPZ - ER 32	344 1122	**169.00**
· 18-pcs, clamping range ø 3 - 20 mm		
· Wooden box		

Steady rest	Item No	€ plus VAT
for lathe **D140**	344 0284	**15.00**
· a = Ø 40 mm; b = 145 mm; c = 70.5 mm		
for lathe **D180**	344 0294	**35.00**
· a = Ø 50 mm; b = 200 mm; c = 90 mm		
for lathe **D210**	344 0315	**45.00**
· a = Ø 55 mm; b = 220 mm; c = 105 mm		
for lathe **D240/D250**	344 1315	**45.00**
· a = Ø 50 mm; b = 245 mm; c = 125 mm		
for lathe **D280**	344 1415	**55.00**
· a = Ø 55 mm; b = 250 mm; c = 140 mm		



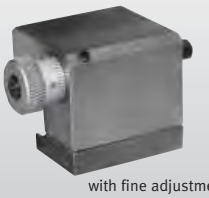
Follow rest		
for lathe **D140**	344 0283	**13.00**
· a = Ø 45 mm; b = 155 mm; c = 76 mm		
for lathe **D180**	344 0293	**30.00**
· a = Ø 40 mm; b = 195 mm; c = 90.5 mm		
for lathe **D210**	344 0310	**45.00**
· a = Ø 34 mm; b = 200 mm; c = 86 mm		
for lathe **D240/D250**	344 1310	**45.00**
· a = Ø 34 mm; b = 220 mm; c = 107 mm		
for lathe **D280**	344 1410	**55.00**
· a = Ø 56 mm; b = 250 mm; c = 130 mm		



Universal collet attachment 5C		
for lathe **D320 - D360**	344 1506	**230.00**
for lathe **D420**	344 1507	**240.00**
for lathe **D460**	344 4006	**259.00**

Position limit stop with fine adjustment	Item No	€ plus VAT
· for lathes **D 320 - D360**	344 1524	**60.00**
4-fold		
· for lathes **D 460**	344 4022	**89.00**
4-fold		
· for lathes **D 560**	344 4023	**99.00**

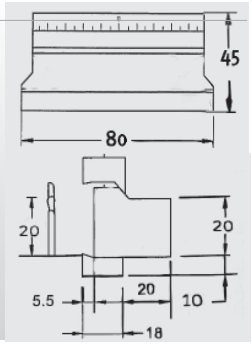
4-fold


with fine adjustment

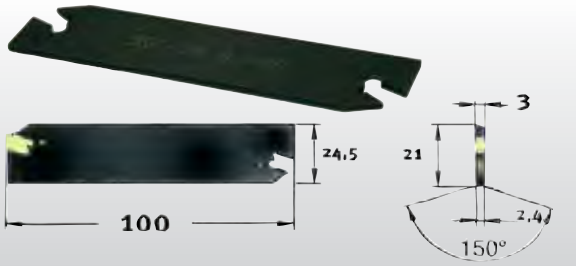
Titanium coated twist drill kit 13 mm	305 1010	**35.00**
· Titanium coated		
· Higher service life and durability		
· Higher hardness than hard metal		
· More rapid working results		
· Low wear		
· 25 pcs; sizes 1 -13 mm		
· Metal box		

Twist drill HSS with morse taper		
· 9- pcs; sizes 14.5/16/18/20/22/24/26/28/30 mm		
· Wooden box		
· High service life		
· Good chip removal		
· Right-hand cutting		
MT 2	305 1002	**95.00**
MT 3	305 1003	**95.00**

Cutting insert block CB1	344 0680	**45.00**
· for cutting-off tool CH1		
· Without SWH from D 420 on, incl. SWH from D 320 on		
· Complete clamping block		
· Without lathe tools		



Lathe tool CH1	344 0685	**49.00**
· Up to 75 mm		
· Incl. cutting plates		



Spare cutting inserts for CH1	344 0686	**95.00**
· 10 pieces		

Universal coolant equipment		
· Lift max. 2.5 m		
· Conveying capacity 8 l/min		
· Tank capacity 11 litres		
· Tank size Lx WxH: 370 x 245 x 170 mm		
· Complete with tank, flexible tube, hose		
· With German switch/plug combination		
· Magnetic foot attachment of the coolant hose		
· For self-assembly		
Universal coolant equipment 230 V	335 2002	**189.00**
Universal coolant equipment 400 V	335 2001	**189.00**

NEW

Direct quick-action drill chuck		
· True running accuracy of less than 0.05 mm		
0 - 8 mm incl. direct seat MT 2	305 0582	**72.00**
0 - 13 mm incl. direct seat MT 3	305 0585	**93.00**
0 - 13 mm incl. direct seat MT 4	305 0587	**99.00**

Quick-action tool holder	Item No	€ plus VAT
· Please find a current list referring the compatibility with our lathes on page 83		
· Repeat accuracy 0.01 mm · Angular scale on the tool holder head		
· 40 different angular positions · Height adjustment via knurled screw		
· Tool holder head and tool holder with profile ground toothing		
· Clamping of the tool holder without clearance and repeat accuracy		
Quick-action tool holder kit SWH AA	338 4311	**250.00**
Consisting of:		
· 1 tool holder head A		
· 3 tool holders 13 x 50 type D for square tools		
· 1 tool holder 13 x 50 type H for round tools		
· For self-assembly		
Spare tool holder 13 x 50 type D for square tools	338 4312	**55.00**
Spare tool holder 12 x 50 type H for round tools	338 4320	**62.00**
Quick-action tool holder kit SWH 1- A	338 4301	**419.00**
Consisting of:		
· 1 tool holder head A		
· 3 tool holders 20 x 90 type D for square tools		
• 1 tool holder 20 x 90 type H for round tools		
· For self-assembly		
Spare tool holder 20 x 90 type D for square tools	338 4302	**69.00**
Spare tool holder 20 x 85 type H for round tools	338 4321	**68.00**
Quick-action tool holder kit SWH 3- E	338 4303	**469.00**
Consisting of:		
· 1 tool holder head E		
· 3 tool holders 20 x 100 type D for square tools		
• 1 tool holder 30 x 100 type H for round tools		
· For self-assembly		
Spare tool holder 20 x 100 type D for square tools	338 4304	**79.00**
Spare tool holder 30 x 100 type H for round tools	338 4322	**91.00**
Quick-action tool holder kit SWH 5 - B	338 4305	**559.00**
Consisting of:		
· 1 tool holder head B		
· 3 tool holders 25 x 120 type D for square tools		
• 1 tool holder 30 x 120 type H for round tools		
· For self-assembly		
Spare tool holder 25 x 120 type D for square tools	338 4306	**82.00**
Spare tool holder 32 x 130 type H for round tools	338 4324	**95.00**
Quick-action tool holder kit SWH 7- C	338 4307	**899.00**
Consisting of:		
· 1 tool holder head C		
· 3 tool holders 32 x 150 type D for square tools		
· 1 tool holder 35 x 150 type H for round tools		
· For self-assembly		
Spare tool holder 32 x 150 type D for square tools	338 4308	**139.00**
Spare tool holder 40 x 160 type H for round tools	338 4326	**175.00**
Quick-action tool holder SWH 9		
Spare tool holder type D for square tools	338 4332	**289.00**
Spare tool holder type H for square tools	338 4333	**399.00**
Factory assembly and adaptation SWH	900 0400	**95.00**
· Only when ordering a new machine		

Tool holder head

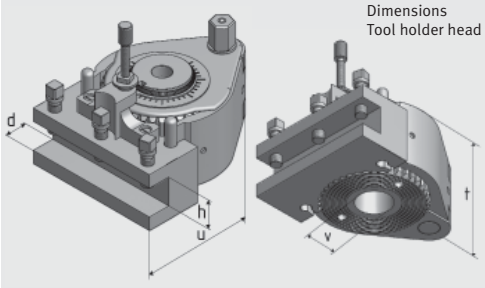
Tool holder type D for square tools 3 pieces

Rear view
Tool holder type H for square tools

Tool holder type H for round tools 1 piece

Rear view
Tool holder type H for round tool

Dimensions
Tool holder head



Tool holder head			AA	A	E	B	C
Turning diameter			120 - 220 mm	150 - 300 mm	200 - 400 mm	300 - 500 mm	400 - 700 mm
Motor lathe max.			1 kW	2.2 kW	4.4 kW	6.6 kW	13 kW
Slide width max.		mm	80	100	120	150	180
Cutting tool rest width	d	mm	10	14	15	20	20/30
Tool max.	h	mm	12	20	20	25	32
Hole standard	v	mm	12	20	20	32	40
Depth of bore hole max.		mm	12	31	31	51	70
Total width	u	mm	74	106	132/142	150/155	202/210
Total height	t	mm	37	55	68	78	110
Depth of bore hole max.	t. max	mm	30	35	35	45	90

Carbide spare reversing plates	Item No	€ plus VAT
5 pcs. Cutting plates C/80° TiN-coated	344 1164	**39.00**

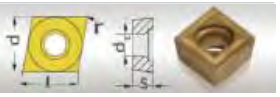
· For lathe tool 2/9/5/12/29 · ISO designation: CCMT060204

l = 6.35 d = 6.35
s = 2.60 d1= 2.70
r = 0.40

5 pcs. Cutting plates C/80° TiN-coated	344 1572	**43.00**

· For lathe tool 32/33 · ISO designation: CCMT09T304

l = 9.50 d = 9.50
s = 4.00 d1= 4.40
r = 0.40



5 pcs. Cutting plates W/80° TiN-coated	344 1165	**39.00**

· For lathe tool 1/8 · ISO designation: WCMX050308F

l = 5.20 d = 6.50
s = 3.35 d1= 3.15
r = 0.80

5 pcs. Cutting plates D/55° TiN-coated	344 1166	**49.00**

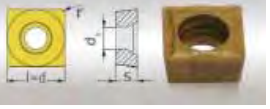
· For lathe tool 3/4/10/11 · ISOBezeichnung: DCMT070204

l = 7.30 d = 6.35
s = 2.53 d1= 2.70
r = 0.40

5 pcs. Cutting plates S/90° TiN-coated	344 1571	**43.00**

· For lathe tool 30/31 · ISOBezeichnung: SCMT09T304

l = 9.52 d = 9.52
s = 4.10 d1= 4.35
r = 0.40



5 pcs. Cutting plates	344 1280	**39.00**

· For lathe tool 24/36 · ISOBezeichnung: SCMT09T304

l = 9.52 d = 9.52
s = 4.10 d1= 4.35
r = 0.40

5 pcs. Cutting plates	344 1281	**39.00**

· For lathe tool 26-28/38-40 · ISO designation: CCMT09T04

l = 11.60 d = 9.53
s = 3.97 d1= 4.40
r = 0.40

5 pcs. Cutting plates	344 1282	**39.00**

· For lathe tool 25/37 · ISO designation: DCMT11T304

l = 9.70 d = 9.53
s = 3.97 d1= 4.40
r = 0.40

5 pcs. Cutting plates W/80°	344 4073	**15.90**

· For lathe tool 41 · ISO designation: WNUM060400FL

l = 8.60 d = 13.35
s = 4.50 d1= 5.16
r = 0.10

5 pcs. Cutting plates S/90°	344 4074	**15.90**

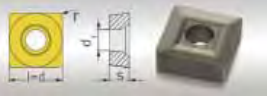
· For lathe tool 42 · ISO designation: SAUM120400FL

l = 13.10 d = 13.10
s = 4.50 d1= 5.16
r = 0.10

5 pcs. Cutting plates S/90°	344 4075	**15.90**

· For lathe tool 42/43/45 · ISO designation: SAUM120404F

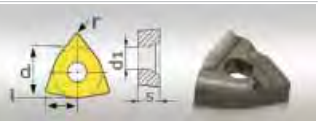
l = 13.10 d = 13.10
s = 4.50 d1= 5.16
r = 0.10



Carbide spare reversing plates	Item No	€ plus VAT
5 pcs. Cutting plates W/80°	344 4076	**15.90**

· For lathe tool 44 · ISO designation: WNUM060400FR

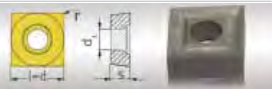
l = 8.60 d = 13.35
s = 4.50 d1= 5.19
r = 0.10



5 pcs. Cutting plates S/90°	344 1267	**8.50**

· For lathe tool 19/20 · ISO designation: SAUM09T300F

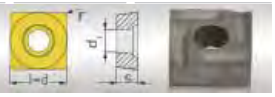
l = 10.00 d = 10.00
s = 3.55 d1= 5.16
r = 0,10



5 pcs. Cutting plates S/90°	344 1269	**8.50**

· For lathe tool 18 · ISO designation: SAUM09T300FL

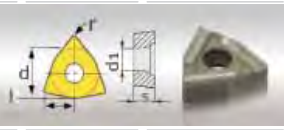
l = 5.40 d = 10.00
s = 3.55 d1= 4.10
r = 0.10



5 pcs. Cutting plates W/80°	344 1268	**8.50**

· For lathe tool 21 · ISO designation: WAUM06T300FR

l = 6.20 d = 10.35
s = 3.55 d1= 4.10
r = 0.10



5 pcs. Cutting plates W/80°	344 1270	**8.50**

· For lathe tool 16/17 · ISO designation: WAUM06T300FL

l = 6.20 d = 10.35
s = 3.55 d1= 4.10
r = 0.10

5 pcs. Parting inserts	344 1161	**5.00**

· For lathe tool 7/14

b = 3.50
l = 12.14
fb = 0.50

5 pcs. Parting inserts	344 1261	**6.00**

· For lathe tool 23/35

b = 4.00
l = 14.00
fb = 0.50

5 pcs. Parting inserts	344 4071	**15.90**

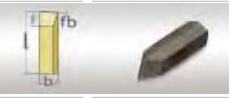
· For lathe tool 47

b = 4.00
l = 16.00
fb = 1.00

5 pcs. Threading 60°	344 1162	**6.00**

· For lathe tool 6/13/15

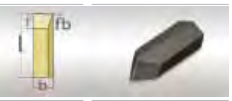
b = 3.00
l = 15.00
fb = 3.00



5 pcs. Threading 60°	344 1263	**11.00**

· For lathe tool 22/34

b = 4.70
l = 20.00
fb = 5.00

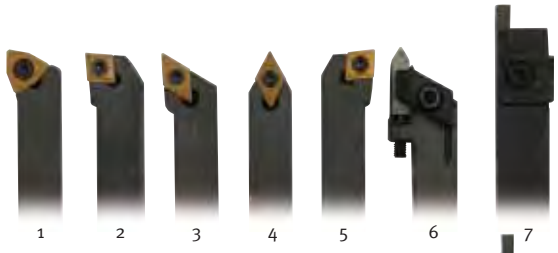


5 pcs. Threading 60°	344 4072	**15.90**

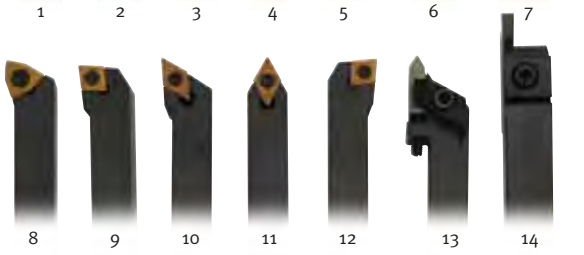
· For lathe tool 46

b = 7.50
l = 25.00
fb = 0.50

Lathe tool kit HM 8 mm 344 1011 **89.00**
· 7-pcs · With carbide reversing plates · TiN coated · Wooden box
Iso designations for tool holder
· Lathe tool 1: SWGCR/L0810D05
· Lathe tool 2: SCLCR/L0810D06
· Lathe tool 3: SDJCR/L0810D07
· Lathe tool 4: SDNCN/L0810D07
· Lathe tool 5: SCLCL0810D06
· Lathe tool 6: LW0810R/L 04
· Lathe tool 7: QA0812R/L03
h_1 = 8 mm (DM 1-6)
h_1 = 12 mm (DM 7)

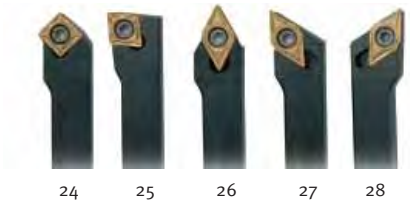


Lathe tool kit HM 10 mm 344 1111 **110.00**
· 7-pcs · With carbide reversing plates · TiN coated · Wooden box
Iso designations for tool holder
· Lathe tool 8: SWGCR/L1010E05
· Lathe tool 9: SCLCR1010E06
· Lathe tool 10: SDJCR/L1010E07
· Lathe tool 11: SDNCN/L1010E07
· Lathe tool 12: SCLCR/L1010E06
· Lathe tool 13: LW1010R/L04
· Lathe tool 14: QA1012R/L03
h_1 = 10 mm

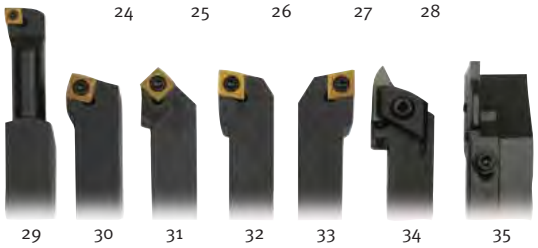


Lathe tool kit HM 12 mm 344 1211 **129.00**
· 9-pcs · With carbide reversing plates · Wooden box
Iso designations for tool holder
· Lathe tool 15: LN1215R/L04
· Lathe tool 16: PWKNR/L1012J06
· Lathe tool 17: PWUNR/L1012J06
· Lathe tool 18: PSSNR/L1012J09
· Lathe tool 19: PSSNR/L1215H09
· Lathe tool 20: PSBNR/L1215H09
· Lathe tool 21: PWGNR/L1215H06
· Lathe tool 22: LW1215R/L06
· Lathe tool 23: QA1222R/L03
h_1 = 12 mm (DM 15.19-22)
h_1 = 13 mm (DM 17-18)
h_1 = 14 mm (DM 16)
h_1 = 17 mm (DM 23)

Lathe tool kit HM 12 mm 344 1212 **289.00**
· 5-pcs · With carbide reversing plates · Made in Germany
Iso designations for tool holder
· Lathe tool 24: SSSC R1616J11
· Lathe tool 25: SCLC R1616J09
· Lathe tool 26: SDNC N1616J11
· Lathe tool 27: SDJC R1616J11
· Lathe tool 28: SDJC R1616J11
h_1 = 12 mm

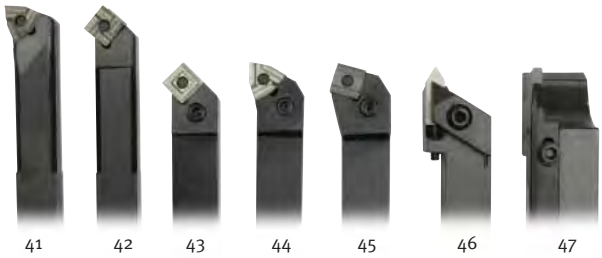


Lathe tool kit HM 16 mm 344 1511 **120.00**
· 7-pcs · With carbide reversing plates · TiN coated · Wooden box
Iso designations for tool holder
· Lathe tool 29: SCLCR1622K06
· Lathe tool 30: SSRCR1616H09
· Lathe tool 31: SSRCR1616H09
· Lathe tool 32: SCGCR1616H09
· Lathe tool 33: SCGCL1616H09
· Lathe tool 34: LW1616R04
· Lathe tool 35: QA1622R/L03
h_1 = 16 mm (DM 3034)
h_1 =22 mm (DM 29; 35)



Lathe tool kit HM 16 mm 344 1216 **299.00**
· 5-pcs · With carbide reversing plates · Made in Germany
Iso designations for tool holder
· Lathe tool 36: SSSC R1616J11
· Lathe tool 37: SCLC R1616J09
· Lathe tool 38: SDNC N1616J11
· Lathe tool 39: SDJC R1616J11
· Lathe tool 40: SDJC R1616J11
h_1 = 16 mm

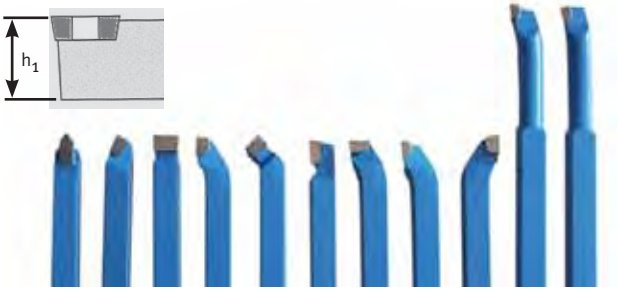
Lathe tool kit HM 20 mm 344 4011 **185.00**
· 7-pcs · With carbide reversing plates · Wooden box
Iso designations for tool holder
· Lathe tool 41: PWUNR/L1518M08
· Lathe tool 42: PSSNR/L1518M12
· Lathe tool 43: PSSNR/L2020-12
· Lathe tool 44: PWGNR2020 08
· Lathe tool 45: PSRNR/L2020-12
· Lathe tool 46: LW2020R 08
· Lathe tool 47: QA2027R/L 04
h_1 = 16 mm (DM 41-42)
h_1 = 20 mm (DM 43-46)



Lathe tool kit 8 mm 344 1008 **59.90**
· 11-pcs · With soldered carbide reversing plates
· Wooden box

Lathe tool kit 10 mm 344 1108 **59.90**
· 11-pcs
· With soldered carbide reversing plates
· Wooden box

Lathe tool kit 16 mm 344 1508 **65.00**
· 11-pcs · With soldered carbide reversing plates · Wooden box



Turning

Machine lamps

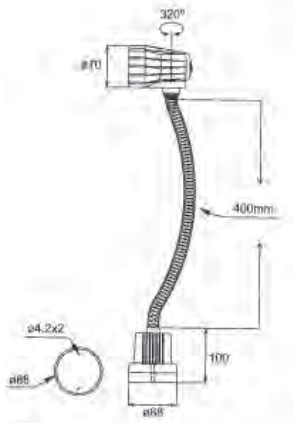
LED lamps

Halogen work lights

Neon work lights

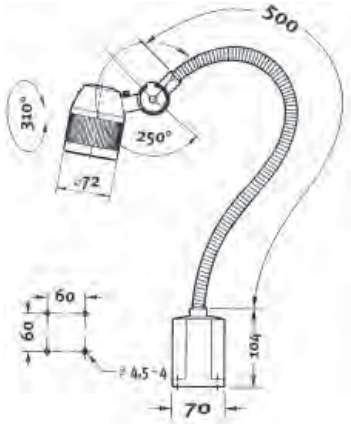
LED lamp AL 12 335 1131 **49.00**

- Energy-saving
- Durable LED lamp
- Intensity of illumination 250 - 330 lux
- Optimum mobility of the articulated arm
- High positioning stability
- Coated articulated arm with a length of 400 mm
- Magnetic stand and mounting plate
- Integrated transformer - 6 W/230 V connection



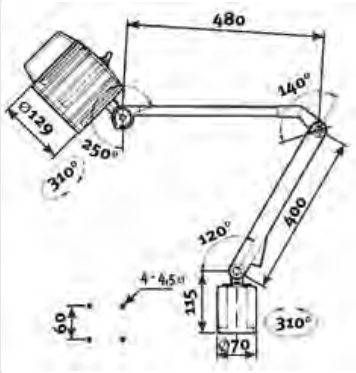
Halogen working place light AL 25 335 1145 **79.00**

- Coated articulated arm for optimum mobility of the head
- High positioning stability
- Articulated head
- Impact-resistant, easy-to-clean plastic housing
- Magnetic stand and mounting plate
- Arm 500 mm
- Protective system IP20
- Integrated transformer - 20 W/230 V connection



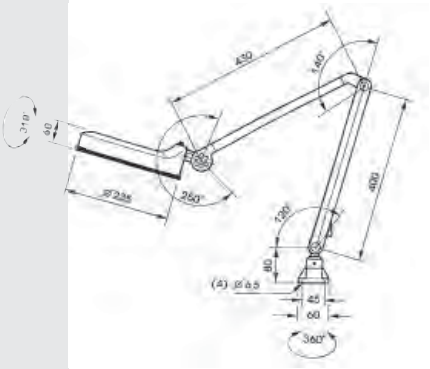
Halogen working place light AL 35 335 1152 **99.00**

- Concentrated halogen light due to anodized, semi-wide radiating round reflector
- Mounting plate
- Ribbed stable aluminium lightning head for protection against water, oil, dust and impact
- Convenient low outside temperature
- Articulated head
- 12 volt illuminant
- Anti-glare grid for glare-free working
- Protective system IP65 (Lamp head)
- Integrated transformer 55 W/230 V connection



Neon working place light ALM 3 335 1160 **119.00**

- Magnification of 3 diameters
- Large magnifying glass: 127 mm diameter
- Joint comfortably adjustable and fixable by hand screw
- Comfortable, glare-free light by round fluorescent tube
- 81 cm articulated arm
- Protective system IP20
- 22 W/230 V connection



All prices plus VAT

Measuring

Digital position displays

Digital 3-axes position measuring system

Outside micrometer

Height measuring and marking instrument

Machine spirit level

Measuring plates and test plates

Digital position display DPA 2000

for precise measuring of all travels and positioning on machines and drives

Digital position display DPA 2000	338 4001	**339.00**

- Obvious reduction of manufacturing times
- Easy-to-operate
- Higher working accuracy
- Error rate is being reduced
- Well-arranged keyboard
- Anti-glare display
- 8-digit LED display including preceding sign
- Permanent memory also in case of power failure
- Splash-proof closed keyboard
- High-grade aluminium housing
- Reversible for milling machines and lathes with arbitrarily selectable resolution
- Display: X, Y/Zo, Z-axes incl. 8-digit LED display each (first digit is the preceding sign)

Possible functions

- Calculator
- Absolute/Incremental operation
- Coupling of axis (sum Z)
- Sub D connector bushing
- Optional display of values in inch or millimeters
- Pitch circle calculator (incremental dimension)
- Coordinates in a circle (graduated circle)
- Holes in a circle (graduated circle)
- Selection of counting direction
- Linear error compensation of the axes
- It is possible to display the values for Z and Zo summarised
- Optional display of values as radius or diameter

Technical data:

- Three evaluable measuring inputs with seven correction memories each for tools
- Electrical connection 230 V ~50 Hz
- Dimensions L x W x H: 280 x 70 x 190 mm
- Weight: 2.6 kg

Scope of delivery

- Wall mount
- Operating manual
- Connection cable 230 V

Fig.: **DPA 2000**

Measuring block for DPA 2000/DPA 2000 S

- Totally enclosed measurement system with high-precision glass scale
- Accuracy 5 µm
- Scanning carriage guided by miniature ball bearings and connected to the mounting stand via coupling
- Rubber sealing lips protect against dust, chips and splash water
- Flexible insulating metal tube protects 3 respectively 4 m long connecting cable (from ML 620 - 4 m on)
- Without assembly

Measuring block	Item No	**€ plus VAT**
ML 80 mm	338 4108	**180.00**
ML 100 mm	338 4110	**185.00**
ML 120 mm	338 4112	**190.00**
ML 170 mm	338 4117	**195.00**
ML 220 mm	338 4122	**200.00**
ML 270 mm	338 4127	**205.00**
ML 320 mm	338 4132	**210.00**
ML 370 mm	338 4137	**215.00**
ML 420 mm	338 4142	**220.00**
ML 470 mm	338 4147	**229.00**
ML 520 mm	338 4152	**245.00**
ML 570 mm	338 4157	**250.00**
ML 620 mm	338 4162	**255.00**
ML 670 mm	338 4167	**260.00**
ML 720 mm	338 4172	**265.00**
ML 770 mm	338 4177	**270.00**
ML 820 mm	338 4182	**275.00**
ML 870 mm	338 4187	**280.00**
ML 920 mm	338 4192	**285.00**
ML 970 mm	338 4197	**295.00**
ML 1020 mm	338 4202	**310.00**
ML 1250 mm	338 4225	**470.00**
ML 1400 mm	338 4240	**595.00**
ML 1520 mm	338 4252	**635.00**
ML 1670 mm	338 4267	**665.00**
ML 1940 mm	338 4294	**795.00**
ML 2010 mm	338 4295	**870.00**
ML 3000 mm	338 4300	**1'419.00**

Factory assembly ML (per measuring block)	900 0410	**250.00**

Fig.: **ML 670 mm**

All prices plus VAT

Digital position display DPA 2000 S equiped with speed display

For precise measuring of the travels and positioning on machines and drives

Fig.: **DPA 2000 S**

Fig.: Rear view **DPA 2000 S**

Digital position display DPA 2000 S	338 4010	**480.00**

- Reversible for milling machines and lathes, arbitrarily selectable input signal (sine/rectangle) in order to use e.g. glass scales and/or magnetic tape systems
- Magnetic tapes for assembling on machines if there is not enough space for magnetic scales
- Sensor to record the spindle speed included in the delivery
- Higher working accuracy
- Obvious reduction of manufacturing times
- Error rate is being reduced
- Easy-to-operate
- Well-arranged keyboard
- Splash-proof, closed, glare-free key pad
- High-grade aluminium housing
- Display: X, Y/Zo, Z-axes with 8-digit LED display each (first digit is the preceding sign)

Scope of delivery

- Speed sensor
- Wall mount
- Operating manual
- Connection cable 230 V

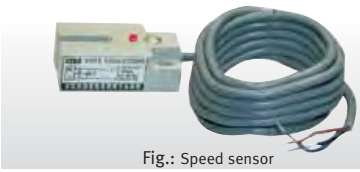


Fig.: Speed sensor

Possible functions

- Calculator
- Speed display
- Coupling of axis (sum Z)
- Sub D connector bushing
- Absolute/Incremental operation
- Conversion inch/metric thread
- Pitch circle calculator (incremental dimension)
- Coordinates in a circle (graduated circle)
- Holes in a circle (graduated circle)
- Reversible measured values radius/diameter
- Zeroing/data presetting
- Self-diagnosis
- Point of reference
- Linear error correction
- 7 tool memories

Technical data

- Three evaluable measuring inputs with seven correction memories each for tools
- Electrical connection 230 V ~50 Hz
- Dimensions L x W x H: 280 x 70 x 185 mm
- Weight: 2.6 kg

Accessories

Magnetic tape MB 100	338 3941	**0.69**

- Price per 1 cm
- With steel tape

Read head activated	338 3932	**190.00**

- For magnetic tape

Factory assembly magnetic tape	900 0412	**150.00**

- Per axis

Perforated disc	338 3926	**15.00**

- For speed sensor
- Lathe D 320 to D 360

Perforated disc	338 3927	**19.00**

- For speed sensor
- Lathe D 420 to D 660

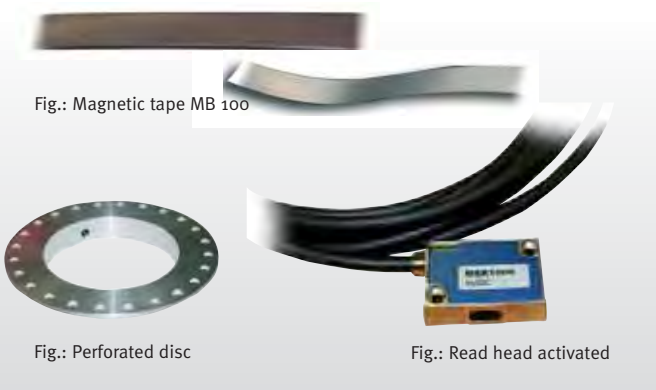


Fig.: Magnetic tape MB 100

Fig.: Perforated disc

Fig.: Read head activated

All prices plus VAT

DPA 2000 S

Assembly proposal

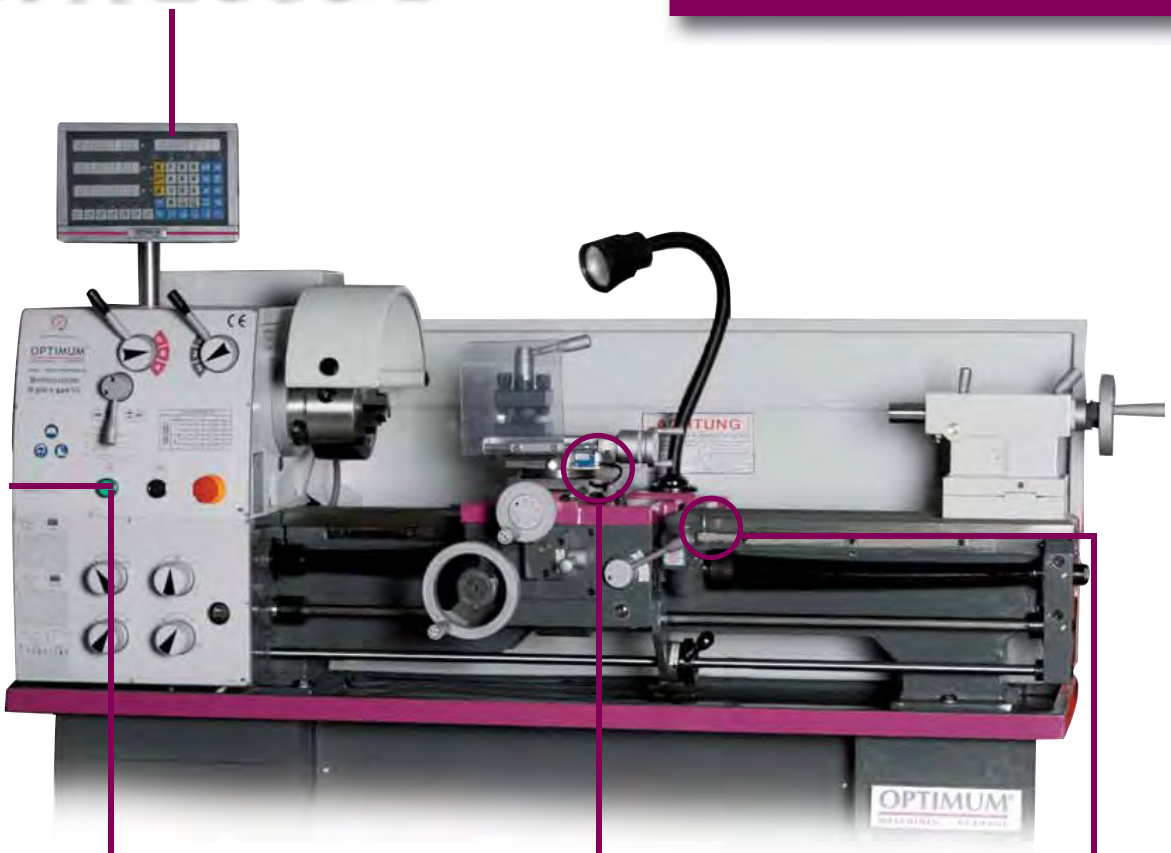
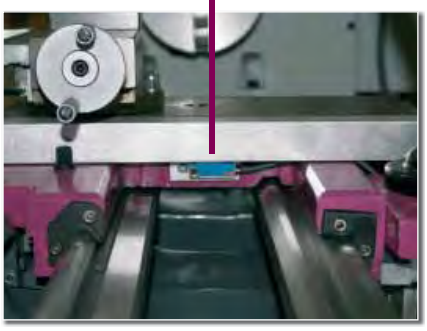


Fig.: **D 320 x 920 with measuring display DPA 2000 S**

· Speed sensor

· Magnetic tape with active sensor



· Magnetic tape with active sensor

Compact digital 3-axis positioning magnetic measuring system MPA - 3
for milling machines and lathes

Fig.: Metal housing

Fig.: Magnetic sensor

Fig.: Power supply unit

Fig. Measuring display

Fig.: Magnetic tape and steel tape

Digital measuring system MPA 3 - kit
· Compact, digital 3-axis position display for milling machines (X - Y - Z) and for lathes (X, Z, Z_0)
· To measure positions
· 3 incremental inputs
· Individually programmable
· 3-row 5-segment display
· Programming keys at the front side
· Free programming of scaling factors, offset, reference value, etc.
· Contactless - maintenance-free - solid
· User-friendly menu guidance
· MPA3 kit **S** e.g. for BF 20(L) Vario, D 180 - D 280
· MPA3 kit **L** e.g. for D320 - D360, BF30 Vario, BF46 Vario
Scope of delivery
· Magnetic stand
· Metal frame
· Power supply unit VDC 24 V
· Magnetic tape MB 100 - Length MPA3 kit **S**: 1'100 mm
· Magnetic tape MB 100 - Length MPA3 kit **L**: 2'000 mm
· Three magnetic sensors MS100/1 Display accuracy 0.005 mm
· Special steel covering, self-adhesive

MPA 3 kit- S	338 3902	**749.00**
MPA 3 kit - L	338 3904	**799.00**
Factory assembly MPA 3 incl. material	900 0420	**390.00**

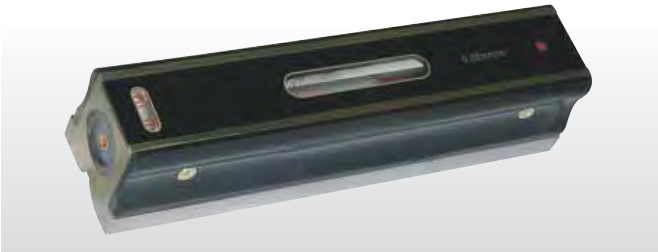
Individual components of the kit		
Measuring display MPA 3	338 3920	**450.00**
· Compact, digital 3-axis position display		
Metal housing	338 3998	**19.00**
· Incl. magnetic stand		
· L x W x H: 87 x 110 x 125 mm		
Magnetic sensor MS 100/1	338 3931	**85.00**
· Display accuracy 0.005 mm		
· Per piece		
Magnetic tape MB 100	338 3941	**0.69**
· Price per cm		
· Incl. steel tape		
Power supply unit	338 3999	**12.90**
· VDC 24 V		

Fig.: D 240 x 500 DG Vario with MPA 3-S measuring display and magnetic tape **MB100**

All prices plus VAT

Machine spirit level	338 5064	**79.00**

- Prism base to align horizontal surfaces and shafts
- Accuracy 0.02 mm/m
- Length 200 mm
- The compact and tension-free installation of the longitudinal spirit level ensures constant accuracy
- No time-consuming adjustment
- Cross spirit level and thermal insulation handle
- Wooden box



Dial gauge	338 5090	**16.00**

- Accuracy according to DIN 878
- Mat chromium plated metal housing
- Clamping shaft 8 mm
- Division 0.01 mm
- Measuring range 10 mm
- Outer ring with two adjustable tolerance marks
- Scale turnable with the outer ring for simple neutral positioning

Precision magnetic gauge stand	335 6650	**19.00**

- Measuring column ø 12 mm x 181 mm
- Cross arm ø 10 mm x 160 mm
- Magnetic base L x W x H: 50 x 62 x 55 mm
- Adhesive force 50 kg
- Dial gauge fixture with location hole for dial gauges, indicating calliper, electrical longitudinal calliper

Fig.: Measuring gauge and measurement stand

Measuring and proof plates	338 5060	**229.00**

- Dimensions L x W x H: 630 x 400 x 100 mm
- Accuracy 7 µ
- Granite
- Thermally and dynamically stable
- Resistance to pressure 250-260 N/mm²
- DIN 876/0
- Corrosion-proof

External micrometer kit 6 pcs.	338 5100	**127.00**

- 6 external micrometers from 0 to 150 mm
- Measuring range 0 - 25 mm, 25 - 50 mm, 50 - 75 mm, 75 - 100 mm, 100 - 125 mm, 125 - 150 mm
- Measuring range with adjustment dimension from 25 mm on
- Accuracy according to DIN 863
- Reading 0.01 mm
- Mat chromium plated scales
- Measuring spindle Ø 6.35 mm
- Measuring surfaces made of hard metal
- Bow with hand guard
- Micrometer drum Ø 17 mm
- With ratchet spanner
- Spindle pitch 0.5 mm
- Wooden box

Precision measuring tool kit MS 4	338 5030	**43.00**

- 5 pieces
- Made of special steel
- Calliper gauge 150 mm x 0.05 mm
- Bevelled steel square DIN 875/110 mm x 70 mm
- Rule 150 mm
- External micrometer 0 - 25 x 0.01 mm
- Plastic box

All prices plus VAT

Metal belt saws

Metal belt saws

Metal circular saws

Light-weighted and handy metal band saw. Perfect for the universal use on building sites, for assembly, for car services, in the shop, in the hobby room and in agriculture

- Ball-bearing saw band guidance
- Quick-action vice for rapid workpiece clamping
- Microswitch for automatic limit stop
- Automatic lowering of the saw bow by means of 3-stage adjustable saw bow lowering pressure
- With high-grade bimetallic saw band supplied as standard
- User-friendly safety switch for IP54 with low-voltage release and emergency-stop pushbutton
- Saw bow can be fixed for transport
- Large, handy handle and little net weight allows trouble-free transport to the building site
- Space-saving due to miter adjustment via the saw bow
- Adjustable material limit stop for standard works

Machine base
- Solid
- Space-saving
- Collapsible
- Easy-to-transport

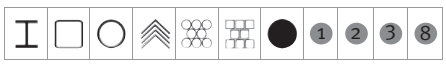
Item No 335 1490
€ 75.00 plus VAT

Model	OPTI S 100 G
Item No	330 0100
€ plus VAT	**529.00**
Features	
Electrical connection	
Motor power	370 W 230 V ~50 Hz
General	
Saw band speed	45 m/min
Saw band dimensions	1'470 x 13 x 0.65 mm
Dimensions	
Length	
with closed vice	850 mm
with opened vice	950 mm
Width	
without material limit stop	300 mm
with material limit stop	660 mm
Height	
lower stop position saw bow	680 mm
upper stop position saw bow	820 mm
Net weight	23 kg
Scope of delivery	Bimetallic saw band Material limit stop Operating tools in a handy holder

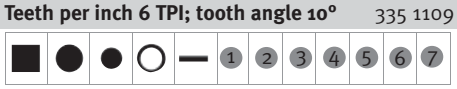
Cutting range		0°	45°
Round material max.		Ø 100 mm	Ø 65 mm
Rectangle max.		100 x 150 mm	100 x 60 mm

Saw bands HSS bimetallic M 42

Teeth per inch 6 -10 TPI; tooth angle 0° 335 1110 **16.90**



Teeth per inch 6 TPI; tooth angle 10° 335 1109 **16.90**



Legend see on page 116

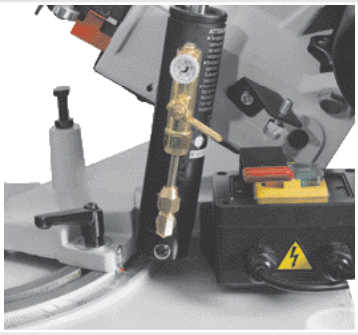
Metal band saw perfect for easy sawing operations
Mitre cuts from -45° up to +60° over swiveling saw bow

- Silent operation
- 3 saw band speeds
- Ball-bearing 3-point saw band guidance
- Quick holding of the workpiece by a quick-action vice
- With high-grade bimetallic saw band supplied as standard
- Mounting base, swivel arm and saw bow made of grey cast iron
- Material limit stop
- Precise, infinitely variable lowering by means of hydraulic cylinder
- Automatic switch-off of the saw after completing the cutting
- Machine base included

- **Material stand MSR 4**
  Item No: 335 7610 **€ 149.00 plus VAT**
- **Material stand MSR 7**
  Item No: 335 7611 **€ 239.00 plus VAT**

Information about MSR on page 114

Saw bow
- Slewable on both sides from -45° to +60°

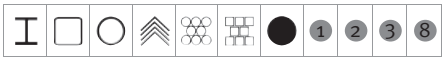


Lowering
- Hydraulical cylinder, continuously adjustable
- Mounting base, swivel arm and saw bow made of robust grey cast iron

Model	OPTI S 130 GH
Item No	330 0130
€ plus VAT	**579.00**
Features	
Electrical connection	
Motor power	410 W 230 V ~50 Hz
General	
Lifting the saw bow	manually
Feed	continuously adjustable
Saw band speed	22/31/55 m/min
Saw band dimensions	1'638 x 13 x 0.65 mm
Dimensions	
Length	1'000 mm
Width	530 mm
Height bottom stop position of saw bow	1'060 mm
Height upper stop position saw bow	1'320 mm
Net weight	78 kg
Scope of delivery	Bimetallic saw band Machine base Material limit stop

Cutting range		0°	45°	60°
Round material max.		Ø 128 mm	Ø 94 mm	Ø 56 mm
Rectangle max.		100 x 150 mm	94 x 78 mm	56 x 56 mm

Saw bands HSS bimetallic M 42		
Teeth per inch 6 - 10 TPI; tooth angle 0°	335 1512	**17.00**
Teeth per inch 10 - 14 TPI; tooth angle 0°	335 1518	**17.00**



Teeth per inch 6 TPI; tooth angle 10°	335 1511	**17.00**

Legend see on page 116

Metal band saw for demanding saw operations with shift transmission and 3 saw band speeds

- Solid casting type
- Silent operation
- Ball-bearing 5-point saw band guidance
- Rapid clamping of the workpiece by quick-action vice, clamping jaws adjustable from 0° to 45° for mitre cuts
- With high-grade bimetallic saw band supplied as standard
- Material limit stop
- Chip brush
- Precise, infinitely variable lowering by means of counterpressure cylinder
- User-friendly safety switch for IP 54 with low-vollage release
- Big wheels and handy transport strap allow trouble-free position change of the metal band saw
- Automatic switch-off of the saw after termination of cutting
- Solid machine base
- Coolant equipment supplied as standard

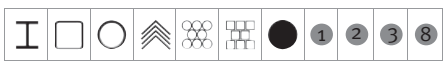
Three saw band speeds
- 36/66/82 m/min. switchable via gear

Quick-action vice
- Adjustable clamping jaws from 0° to 45° for mitre cuts

Model	OPTI S 181 G
Item No	330 0182
€ plus VAT	**1'250.00**
Features	
Electrical connection	
Motor power	750 W 400 V ~50 Hz
General	
Lifting the saw bow	manually
Feed	continuously adjustable
Saw band speed	39/66/82 m/min
Saw band dimensions	2'362 x 19 x 0.9 mm
Dimensions	
Length max.	1'200 mm
Width without material limit stop	450 mm
Width with material limit stop	720 mm
Height bottom stop position of saw bow	1'050 mm
Height upper stop position saw bow	1'600 mm
Net weight	130 kg
Scope of delivery	Bimetallic saw band Hydraulic lowering cylinder Machine base Material limit stop Coolant equipment

Cutting range		0°	45°
Round material max.		Ø 180 mm	Ø 110 mm
Rectangle max.		180 x 240 mm 65 x 300 mm	170 x 110 mm

Saw bands HSS bimetallic M 42		
Teeth per inch 5 - 8 TPI; tooth angle 0°	335 7522	**25.00**
Teeth per inch 6 - 10 TPI; tooth angle 0°	335 7521	**25.00**



Teeth per inch 5 - 8 TPI; tooth angle 6°	335 7516	25.00

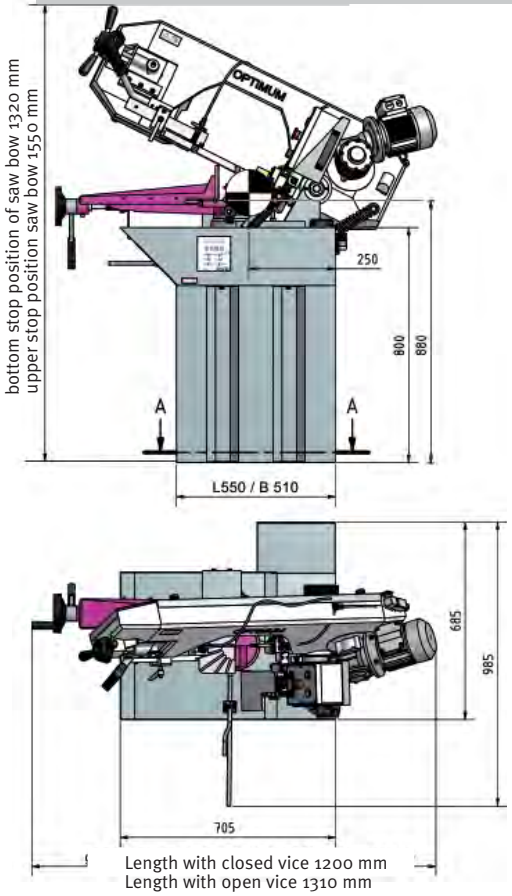
Legend see on page 116

Sawing

Band saws for the metal working with mitre-swiveling saw bow and 2 saw band speeds. "VARIO" with infinitely variable speed control and frequency converter "Made in EU"

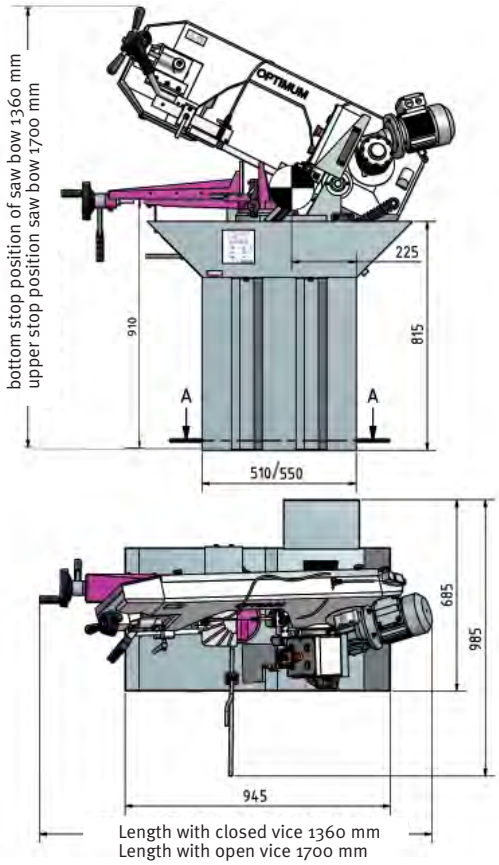
- Heavy casting type
- High cutting accuracy due to vibration-free running
- Silent operation
- 2 saw band speeds switchable by means of 2-stage motor
- "Vario" type with frequency converter of industrial quality "Made in EU"
- Ball bearing 5-point saw band guiding, durable, precise and adjustable
- S 275 G/S 275 G Vario with easy saw bow adjustment for mitre cutting by 60°
- Quick and safe holding of the workpiece by a quick-action vice with an additional lever
- With high-grade bimetallic saw band supplied as standard
- Material limit stop
- Chip brush
- Precise, infinitely variable lowering by means of hydraulic cylinder
- Automatic switch-off of the saw after completing the cut
- Control panel with well-arranged keyboard for simple operation
- Solid machine base
- Coolant equipment supplied as standard
- Coolant drip pan

Dimensions OPTI S 210 G



Model	OPTI S 210 G	OPTI S 275 G
Item No	330 0210	330 0275
€ plus VAT	**1'550.00**	**1'790.00**
Model	**OPTI S 210 G Vario**	**OPTI S 275 G Vario**
Item No:	301 2210	301 2275
€ plus VAT	**2'590.00**	**2'890.00**
Features		
Electrical connection		
Motor power	750 W 400 V ~50 Hz	1.1 kW 400 V ~50 Hz
Motor coolant pump	40 W	40 W
General		
Lifting the saw bow	manually	manually
Feed	continuously adjustable	continuously adjustable
Saw band speed	40 - 80 m/min	45 - 90 m/min
Saw band speed Vario	12 - 120 m/min	14 - 120 m/min
Saw band dimensions	2'080 x 20 x 0.9 mm	2'480 x 27 x 0.9 mm
Net weight	157 kg	200 kg
Net weight Vario machines	160 kg	205 kg
Scope of delivery	Bimetallic saw band Hydraulic lowering cylinder Machine base Material limit stop Quick-action vice Chip drip pan	

Dimensions OPTI S 275 G



Cutting range S210G		0°	45°	60°
Round material max.		Ø 170 mm	Ø 125 mm	-
Rectangle max.		210 x 140 mm	125 x 100 mm	-

Cutting range S270G		0°	45°	60°
Round material max.		Ø 225 mm	Ø 160 mm	Ø 100 mm
Rectangle max.		245 x 180 mm	160 x 160 mm	100 x 100 mm

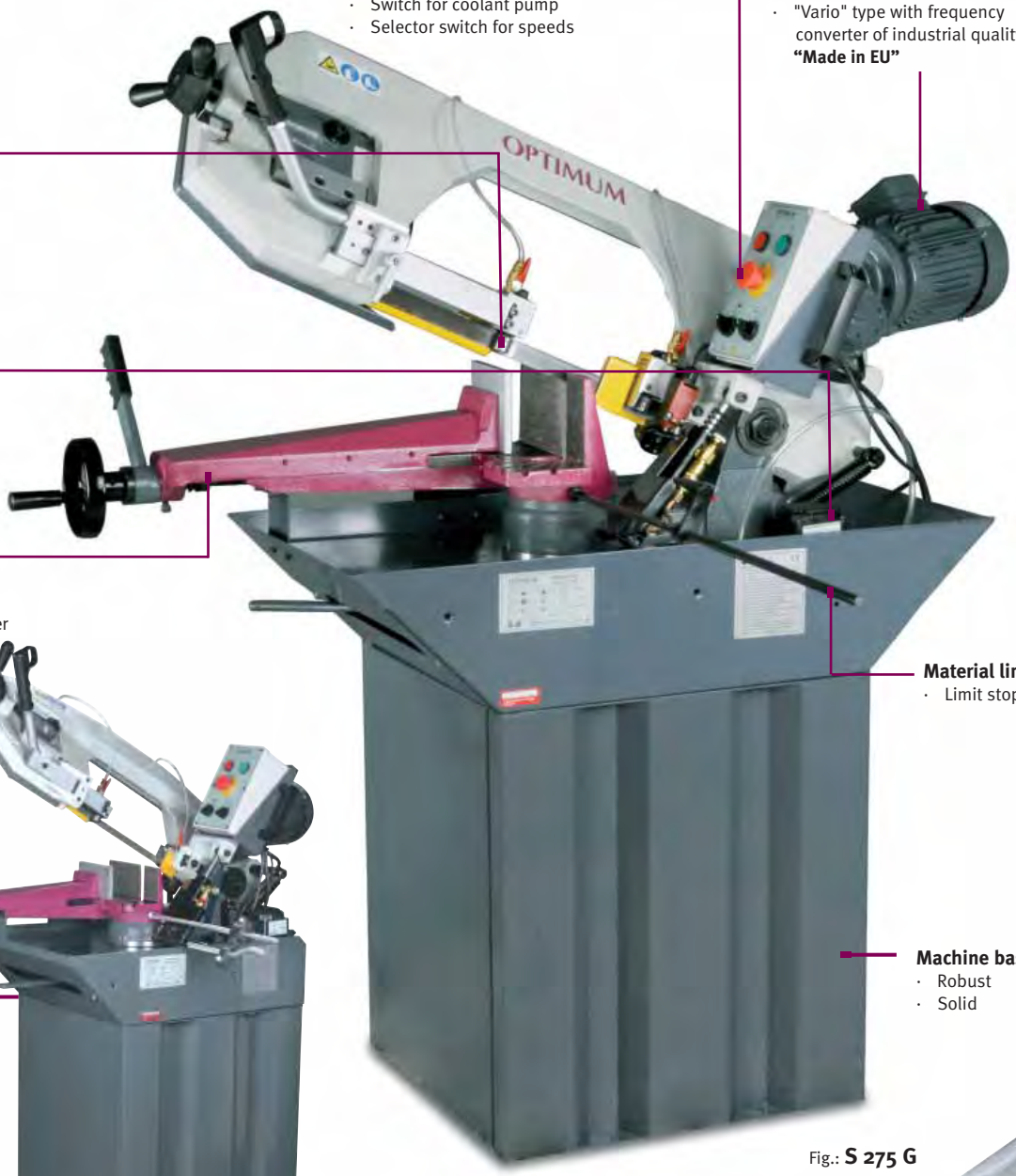
Control panel
- Well-arranged keyboard for simple operation
- Emergency-stop pushbutton
- Switch for coolant pump
- Selector switch for speeds

Speed
- 2 saw band speeds switchable via 2-stage motor
- "Vario" type with frequency converter of industrial quality **"Made in EU"**

Saw band guiding
- 5-point ball bearing
- Precise
- Durable
- Readjustable
- Chip brush

Coolant equipment
- Supplied as standard
- Dosing and stop valve
- Tank capacity 10 litres

Quick-action vice
- Adjustable via handwheel
- Clamping of the workpiece via handy quick-action lever



Material limit stop
- Limit stop for sawing

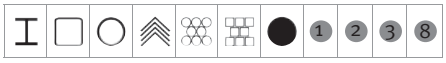
Machine base
- Robust
- Solid

Fig.: **S 210 G**

Fig.: **S 275 G**

S210G/S210 G Vario

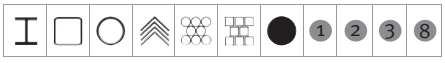
Saw bands HSS bimetallic M 42		
Teeth per inch 5 - 8 TPI; tooth angle 0°	335 7503	**25.00**
Teeth per inch 6 - 10 TPI; tooth angle 0°	335 7514	**25.00**



Teeth per inch 5 - 8 TPI; tooth angle 6°	335 7505	**25.00**

S210G/S210 G Vario

Saw bands HSS bimetallic M 42		
Teeth per inch 5 - 8 TPI; tooth angle 0°	335 7511	**29.00**
Teeth per inch 6 - 10 TPI; tooth angle 0°	335 7524	**29.00**



Teeth per inch 5 - 8 TPI; tooth angle 6°	335 7512	**29.00**

Legend see on page 116

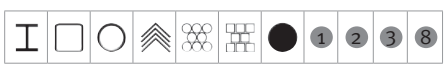
Metal band saw with mitre-swiveling saw bow for economic and precise working

- Heavy casting type
- High cutting accuracy due to vibration-free running
- Silent operation
- Mitre adjustment from -45° up to 60° by slewing the whole saw bow
- Precise and durable saw band guiding, adjustable
- Quick and safe holding of the workpiece by a quick-action vice with an additional lever, shiftable for large materials
- With high-grade bimetallic saw band supplied as standard
- Material limit stop with scaling
- Limit stops exactly adjustable within an accuracy of a degree
- Chip brush
- Precise, infinitely variable lowering via hydraulic cylinder
- Automatic switch-off of the saw after completing the cutting
- Roller support adjustable for long and heavy workpieces
- Control panel with well-arranged keyboard for simple operation
- Solid machine base
- Coolant equipment supplied as standard - Coolant tank filling capacity 25 litres
- Coolant drip pan

Model	OPTI S 290 G
Item No	329 0290
€ plus VAT	**3'290.00**
Features	
Electrical connection	
Motor power	1.5 kW 400 V ~50 Hz
Coolant pump	50 watts
General	
Feed	continuously adjustable
Saw band speed	35 - 70 m/min
Saw band dimensions	2'750 x 27 x 0.9 mm
Dimensions	
Length	1'700 mm
Width	
without material limit stop	880 mm
with material limit stop	1'300 mm
Height	
lower stop position saw bow	1'320 mm
upper stop position saw bow	1'850 mm
Net weight	335 kg
Scope of delivery	Bimetallic saw band Hydraulic lowering cylinder Machine base Material limit stop Chip drip pan, Quick-action vice Coolant equipment

Cutting range		0°	- 60°
Round material max.		Ø 255 mm	Ø 135 mm
Rectangle max.		310 x 210 mm	135 x 135 mm
Square max.		210 mm	135 mm
Cutting range		**+ 45°**	**- 45°**
Round material max.		Ø 220 mm	Ø 230 mm
Rectangle max.		220 x 200 mm	230 x 210 mm
Square max.		210 mm	210 mm

Saw bands HSS bimetallic M 42		
Teeth per inch 5 - 8 TPI; tooth angle 0°	335 7751	**35.00**
Teeth per inch 6 - 10 TPI; tooth angle 0°	335 7753	**35.00**



Teeth per inch 5 - 8 TPI; tooth angle 10°	335 7752	**35.00**

Legend see on page 116

Manometer
- Simple and correct control of the saw band tension

Pushbutton "Manual saw band running"
- Switches the running of the saw band on and off

Control panel
- Largely dimensioned
- At eye level

Roller support
- To support long materials
- Solid

Saw band guiding
- Precise
- Long-life
- Readjustable
- Chip brush

Lifting of saw bow
- Additional lever

Quick-action vice
- Adjustable via handwheel
- Clamping of the workpiece via handy quick-action lever

Clamping lever for saw bow
- Saw cuts in the range from -45° up to +60° are continuously adjustable
- Angle adjustments are readable via scale

Material limit stop
- With scaling
- Length 50 cm

Base
- Robust
- Solid

Lowering speed
- Simple adjustment via feed gear control valve on the control panel
- Emergency-stop pushbutton

- **Material stand MSR 4**
  Item No: 335 7610 **€ 159.00 plus VAT**
- **Material stand MSR 7**
  Item No: 335 7611 **€ 249.00 plus VAT**

Information about MSR on page 114

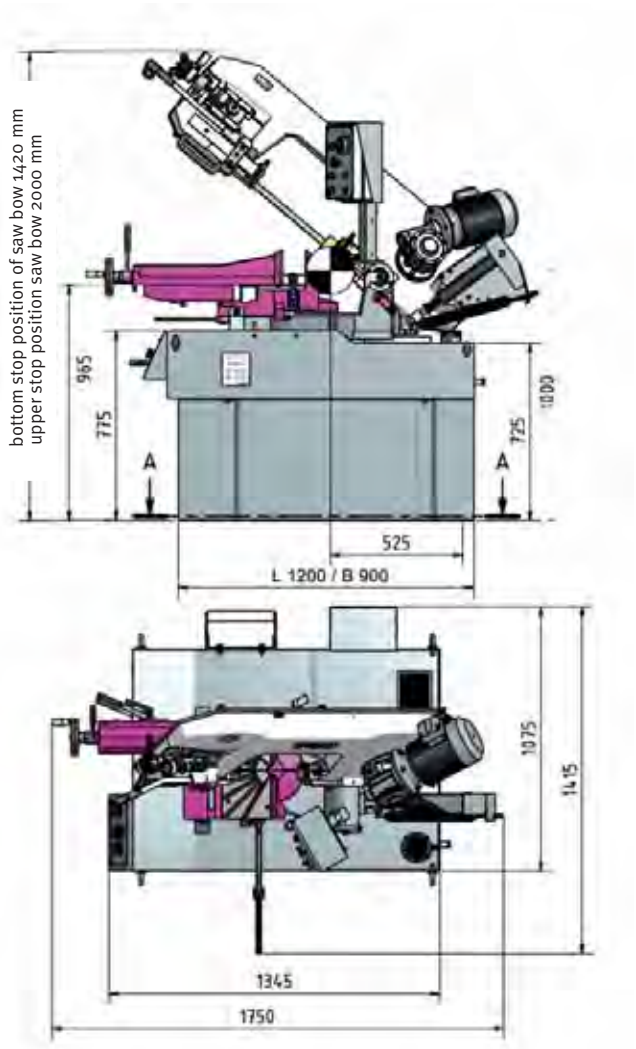
Metal band saw of heavy casting type

- Heavy industrial type
- High cutting accuracy
- Silent operation
- Mitre adjustment of up to 60° by slewing the whole saw bow
- Combinable and individual adjustable hard metal and ball-bearing guidances of the saw band
- With high-grade bimetallic saw band supplied as standard
- Shiftable quick-action vice for large materials
- Material limit stop with scaling
- Limit stops exactly adjustable within an accuracy of a degree
- Chip brush
- Easy adjustment of the lowering speed in the control panel
- Automatic switch-off of the saw after completing the cutting
- Roller support adjustable for long and heavy workpieces
- Solid machine base
- Coolant equipment supplied as standard

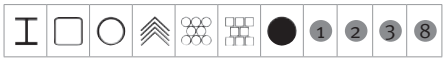
Model	Opti S 350 G
Item No:	329 0350
€ plus VAT	**4'950.00**
Features	
Electrical connection	
Motor power	2.2 kW 400 V ~50 Hz
Motor coolant pump	50 W
General	
Lifting the saw bow	manual
Feed	hydraulically via lowering cylinder
Saw band speed	36 - 72 m/min
Saw band dimensions	2'925 x 27 x 0.9 mm
Net weight	550 kg
Scope of delivery	Bimetallic saw band Coolant equipment Hydraulic lowering cylinder Machine base Material limit stop Quick-action vice

Cutting range		0°	- 60°
Round material max.		Ø 270 mm	Ø 140 mm
Rectangle max.		350 x 240 mm	140 x 140 mm
Square max.		260 mm	140 mm
Cutting range		**-45°**	**+45°**
Round material max.		Ø 230 mm	Ø 200 mm
Rectangle max.		230 x 150 mm	200 x 140 mm
Square max.		210 mm	170 mm

Dimensions



Saw bands HSS bimetallic M 42		
Teeth per inch 5 - 8 TPI; tooth angle 0°	335 7541	**37.00**
Teeth per inch 6 - 10 TPI; tooth angle 0°	335 7542	**37.00**



Teeth per inch 4 - 6 TPI; tooth angle 6°	335 7540	**37.00**

Legend see on page 116

Saw band tension
- Simple and correct control of the saw band tension via manometer

Saw band guiding
- Ball bearing with hard metal plates for optimum cuts

Quick-action vice
- Adjustable via handwheel
- Clamping of the workpiece via handy quick-action lever
- Shiftable for large materials

Control panel
- Slewable
- Largely dimensioned
- At eye level

Hydraulic cylinder
- Continuously adjustable saw bow movement

Material limit stop
- Scale

Lowering speed
- Simple adjustment via feed gear control valve on the control panel
- Emergency-stop

Base
- Solid type

Coolant pump
- Included in delivery as standard

- **Material stand MSR 4**
  Item No: 335 7610 **€ 159.00 plus VAT**
- **Material stand MSR 7**
  Item No: 335 7611 **€ 249.00 plus VAT**

Information about MSR on page 114

Semi-automatic metal band saw with two speeds

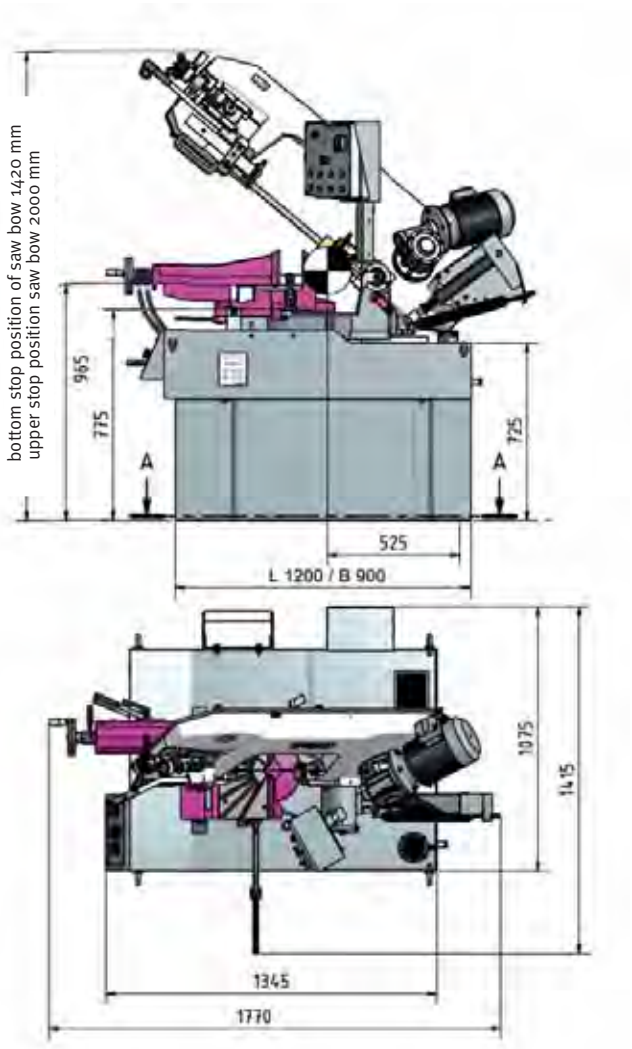
- Manual or semi-automatic operation
- Heavy industrial type
- High cutting accuracy
- Silent operation
- Mitre adjustment of up to 60° by slewing the whole saw bow
- Combinable and individual adjustable hard metal and ball-bearing guidances of the saw band
- With high-grade bimetallic saw band supplied as standard
- Simple and right control of the saw band tension via manometer
- Shiftable hydraulic quick-action vice for large materials
- Material limit stop with scaling
- Limit stops exactly adjustable within an accuracy of a degree
- Chip brush
- Easy adjustment of the lowering speed in the control panel
- Automatic switch-off of the saw after completing the cutting
- Roller support adjustable for long and heavy workpieces
- Solid machine base
- Coolant equipment supplied as standard

Function semi-automatic operation
- Closing vice and activating motor
- Lowering of the saw bow for cutting
- Stopping the motor and resetting the saw bow to its initial position

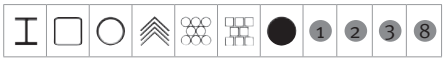
Model	**OPTI S 350 GA**
Item No:	329 2350
€ plus VAT	**6'550.00**
Features	
Electrical connection	
Motor power	2.2 kW 400 V ~50 Hz
Motor coolant pump	50 W
General	
Lifting the saw bow	
Manual mode	hydraulic via hand-actuated auxiliary switch
Semi-automatic mode	automatic
Feed	hydraulically via lowering cylinder
Saw band speed	36 - 72 m/min
Saw band dimensions	2'925 x 27 x 0.9 mm
Net weight	600 kg
Scope of delivery	Bimetallic saw band Coolant equipment Hydraulic lowering cylinder Machine base Material limit stop Quick-action vice

Cutting range		**0°**	**- 60°**
Round material max.		Ø 270 mm	Ø 140 mm
Rectangle max.		350 x 240 mm	140 x 140 mm
Square max.		260 mm	140 mm
Cutting range		**-45°**	**+45°**
Round material max.		Ø 230 mm	Ø 200 mm
Rectangle max.		230 x 150 mm	200 x 140 mm
Square max.		210 mm	170 mm

Dimensions



Saw bands HSS bimetallic M 42		
Teeth per inch 5 - 8 TPI; tooth angle 0°	335 7541	**37.00**
Teeth per inch 6 - 10 TPI; tooth angle 0°	335 7542	**37.00**



Teeth per inch 4 - 6 TPI; tooth angle 6°	335 7540	**37.00**

Legend see on page 116

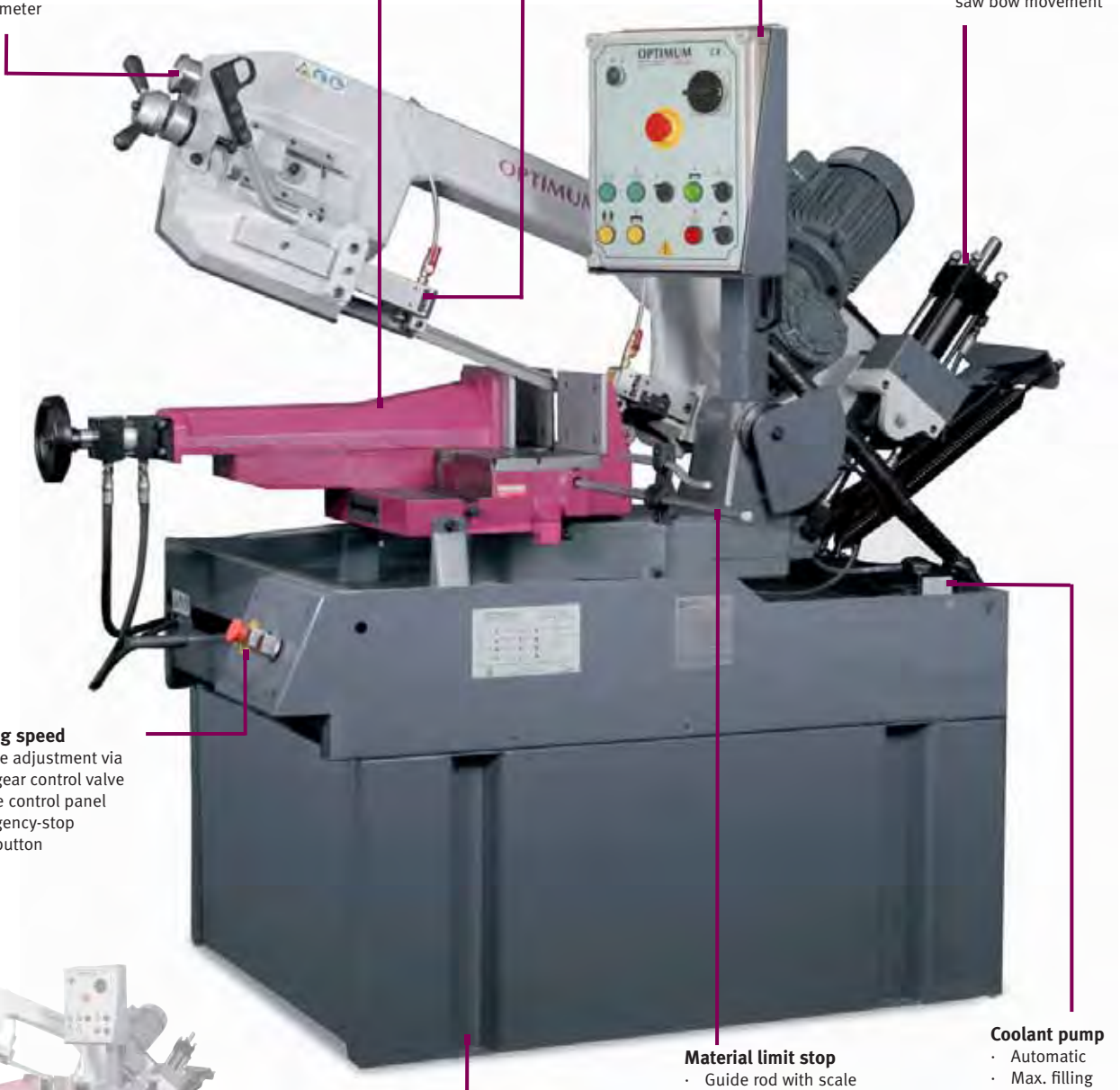
Quick-action vice
- **Hydraulic**
- Automatically closing
- Shiftable for large cross sections
- Saw cuts in the range from -45° up to +60° are continuously adjustable
- Angle adjustments are readable via scale

Saw band guiding
- Ball bearing with hard metal plates for optimum cuts

Control panel
- Clearly arranged
- Slewable

Saw band tension
- Simple and exact control via manometer

Hydraulic cylinder
- Continuously adjustable saw bow movement



Lowering speed
- Simple adjustment via feed gear control valve on the control panel
- Emergency-stop pushbutton

Material limit stop
- Guide rod with scale

Coolant pump
- Automatic
- Max. filling capacity 35 litres

Base
- Solid type

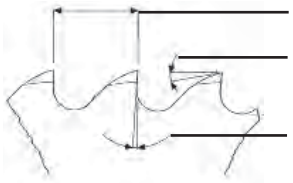
- **Material stand MSR 4**
  Item No: 335 7610 **€ 159.00 plus VAT**
- **Material stand MSR 7**
  Item No: 335 7611 **€ 249.00 plus VAT**

Information about MSR on page 114

Manual circular metal saws for steel, iron, light metals, solid material and profiles

- Centrically clamping vice, quadruple guiding, with individually adjustable clamping jaws
- Cutting is always performed at an optimum position towards the workpiece
- Clamping system with 4 levers
- Functional, all-surrounding movable protective device with rapid opening mechanism provides optimum protection when cutting
- Long handle allows sawing without great effort
- Slewing range of ± 45°
- Well readable angle scale allows precise working
- Adjustment of the mitre in seconds
- Integrated On/Off pushbutton in the handle
- Protected vice spindle
- Solid machine base 4, bores on both sides for mounting of the material stand MSR
- The saw will be delivered without circular saw blade (saw blade division freely selectable)

Information on circular saw blade
· **4 T(mm):** Tube/Profile (Wall thickness)
up to 1 mm: aluminium / bronze / copper / brass
up to 1.5 mm: steels up to 1.500 N/m²/stainless steels
up to 2 mm: steels up to 1'200 N/m²
· **6 T(mm):** Tube/Profile (Wall thickness)
up to 1.5 mm: aluminium / bronze / copper / brass
from 3 mm on: steels up to 1.800 N/m²
· **6 T(mm):** Solid material (cross section)
10-20 mm: aluminium / bronze / copper / brass
20-40 mm: steels up to 1.800 N/m²/stainless steels...
· **8 T(mm):** Tube/Profile (Wall thickness)
from 3 mm on: aluminium / bronze / copper / brass
8 T(mm): Solid material (cross section)
20-40 mm: steels up to 1.800 N/m²/aluminiumu/bronze/copper
40-60 mm: steels up to 1.200 N/m²/stainless steels...



Model	OPTI CS 275	OPTI CS 315
Item No:	330 2275	330 2300
€ plus VAT	**1'495.00**	**1'890.00**
Features		
Electrical connection		
Motor power	2.0/1.4 kW 400 V ~50 Hz	1.5/0.75 kW 400 V ~50 Hz
General		
Cutting angle	-45° - +45°	-45° - +45°
Cutting angle adjustment	via rotatable pedestal	via rotatable pedestal
Feed	manual	manual
Cutting speed	41/82 rpm	19/38 rpm
Saw blade diameter	Ø 275 mm; inside Ø 40 mm	Ø 315 mm; inside Ø 40 mm
Span of vice	110 mm	135 mm
Dimensions		
Length	810 mm	910 mm
Width	550 mm	546 mm
Height	1'580 mm	1'759 mm
Net weight	175 kg	235 kg
Scope of delivery	Coolant equipment Machine base, Quick-action vice without saw blade	

Cutting range		0°	45°
Round material max.		Ø 60 mm	Ø 60 mm
Rectangle max.		100 x 60 mm	70 x 60 mm
Square max.		60 mm	60 mm

CS 275 Metal circular saw blade HSS			
· Ø 275 mm; inside Ø 40 mm x 2.5 mm			
4 teeth T(mm) 220 teeth		335 7444	**89.00**
6 teeth T(mm) 140 teeth		335 7446	**89.00**
8 teeth T(mm) 110 teeth		335 7448	**89.00**

CS 315 Metal circular saw blade HSS		
· Ø 315 mm; inside Ø 40 mm x 2.5 mm		
4 teeth T(mm) 240 teeth	335 7454	**119.00**
6 teeth T(mm) 150 teeth	335 7456	**119.00**
8 teeth T(mm) 120 teeth	335 7458	**119.00**

Handle
- Long; allows sawing without great effort
- Integrated pushbutton (On/Off)

Protective device
- Functional
- All-surrounding
- Movable
- Rapid opening mechanism for optimum protection when cutting

Vice
- Centrically clamping
- Quadruple guiding
- Individual adjustable clamping jaws
- Cutting is always performed at an optimum position towards the workpiece
- Clamping system with 4 levers
- Protected vice spindle

Coolant equipment
- Automatic switching on when sawing
- Dosing valve and stop valve

Fig.: **CS 275**

Fig.: **CS 315**

Machine base
- Solid
- Lockable door

Coolant pump
- Removable coolant tank
- Integrated high-performance pump

Sawing

Height-adjustable material stands MSR as manual aid for supporting and moving of workpieces for metal saws

- Optimum device to support long and heavy workpieces
- Universally applicable for e.g. metal band saws, circular saws etc.
- Trouble-free and efficient material transport for feeding and removal of workpieces
- Roller support infinitely height adjustable and clampable
- Safe workpiece support due to massive heavy-duty steel rolls
- Steel rolls with roller bearing on both sides
- Additional PVC coated rolls can be mounted
- Stable construction made of special profile
- Continuously extendable
- Option to assemble the length measuring systems LMS

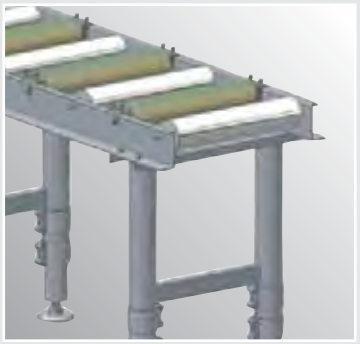
Fig.: **MSR 4**

Fig.: **MSR 7**

Frame
- Solid type
- Solid special profile

Support rollers
- Steel
- Ball-bearing on both sides

Support height
- Variably adjustable from 650 - 950 mm



Optional PVC rolles
- Additionally mountable
- Coated with non-slip PVC
- Only hang on the rollers in the existing fixture

Model	MSR 4	MSR 7
Item No:	335 7610	335 7611
€ plus VAT	**159.00**	**249.00**
Technical data		
Diameter of support rollers	60 mm	60 mm
Width of support rollers	360 mm	360 mm
Static table load	500 kg	700 kg
Dimensions		
Length	1'000 mm	2'000 mm
Width	440 mm	440 mm
Height	650 - 950 mm	650 - 950 mm
Net weight	30 kg	58 kg
Scope of delivery	Fixing material for extension	

Accessories	PVC rolles 3 pieces
Item No:	335 7609
€ plus VAT	**99.00**
Scope of delivery	Wall holder, add-on kit

Fig.: **PVC rolles**
in a handy wall holder

Length measuring systems to be mounted on Optimum material stands MSR for perfect length measuring and exact positioning

- Magnetic measuring system with magnetic tape
- For repeating measuring tasks at high accuracy of 0.1 mm
- Automatic switching of the display
- In case of long breaks, the measuring system will switch off and keep the last measured value saved
- Measuring accuracy: ±(0.025 + 0.02 x measured length [m])
- Battery service life up to 10 years

- Display: LCD
- Functions:
  zero display,
  reset,
  direction display ±,
  measuring unit 0.01 mm
- Absolute dimension and incremental dimension

Fig.: Material stand **MSR 7** with length measuring system **LMS 2**

Model	LMS 1	LMS 2	LMS 3	LMS 4
Item No:	338 3881	338 3882	338 3883	338 3884
€ plus VAT	**509.00**	**639.00**	**759.00**	**879.00**
Technical data				
Length of bar	1'000 mm	2'000 mm	3'000 mm	4'000 mm
Travel	830 mm	1'830 mm	2'830 mm	3'830 mm

Slide
- Easy moving
- Precisely guided
- Replaceable long-life dry sliding friction bearings

Stop slider
- Can be folded up

Material limit stop
- For large diameters
- Easy self-assembly

Linear slideway
- Without lubrication
- Very smooth running
- Free of wearing
- Corrosion-resisting
- Little coefficient of friction
- High static load

General information about saw bands

Workpiece

The workpiece to be manufactured needs to be firmly clamped so that it can neither vibrate nor turn. Do not use any damaged, wrapped nor heavily deformed workpieces. The cut will be more exactly the nearer the band saw guidance are fixed to the workpiece.

Spacing (toothing)

The toothing determines the number of teeth per one inch (25.4 mm).
As a general rule it applies:
The shorter the cutting length (e.g. profiles), the finer is the selected toothing. The larger the material cam (e.g. solid material), the more coarse is the used toothing.
If the toothing it too large it might cause cutting run off since chips are plugging the chip catch and the saw band is forced to deviate from its cutting line. If the toothing is too little it may result in tooth breaks, since the cutting force on one single tooth is becoming too strong. At least three teeth should cam in to realize a economic result.

Retracting saw bands

- Correct retracting guarantees a long service life.
- Sharp cutting edges with extremely small edge radiuses are the condition for high cutting capacities of the saw bands.
- In order to achieve an optimum service life, we recommend you to retract the saw bands accordingly.
- Determine the correct cutting speed (m/min) and the feed (mm/min) depending on the material and the dimension of your cutting material.
- It is important that the new saw band should be used at about 50% of the determined feed. In this way, it is avoided that damages occur due to extremely sharp tooth cutting edges at too large chip thicknesses caused by micro splinters.
- New saw bands can initially be liable to vibrations and to vibration noises. If this occurs, reduce the cutting speed a little. For smaller workpiece dimensions you should remove about 300-500 cm² of the cutting material in order to retract the saw band.
- If you machine larger workpiece dimensions, we recommend you to perform the retracting during a period of time of about 15 min. After retracting, slowly increase the feed to the initially determined target value.

Materials	Cutting speed (M42)
Construction steel/Machining steel	80 - 90 m/min
Case-hardened steels/Tempered steel	45 - 75 m/min
Unalloyed tool steels/Roller bearing steels	40 - 60 m/min
Alloyed tool steels/High-speed steels	30 - 40 m/min
Stainless steels	20 - 35 m/min
Heat-resistant steels/High-temperature alloy	15 - 25 m/min

Optimum chip formation

Cutting chips are the best indicator for the correctly adjusted feed and saw band speeds. Please have a look at the chips which you have produced and correctly adjust your feed.

Thin chips which look like powder
• Increase thee feed, or reduce the saw band speed.

Burnt, heavy chips
• Reduce the feed and/or the saw band speed.

Curled, silver and warm chips
• Optimum feed and saw band speed.

Legend

MATERIAL

■	Solid square
I	Carrier
○	Thick-walled tube
●	Solid round bar steel
—	Solid flat bar steel
□	Tube
⁂ ⁘	Bunch

1	Construction steel Deep-drawing steel Machining steel
2	Construction steel Tempering steel
3	Case hardened steel Tempering steel
4	Ball bearing Tool steel
5	High-speed steel Tool steel
6	Rust and acid-resisting steel
7	Non-ferrous metals
8	Cast iron

Toothing when using HSS bimetal bands

Standard toothing		Combined toothing	
Number of teeth cross section	Number of teeth per Inch	Profile cross section	Number of teeth per Inch
‹ 12 mm	14 TPI	‹ 25 mm	10 - 14 TPI
12 - 30 mm	10 TPI	20 - 40 mm	8 - 12 TPI
30 - 50 mm	8 TPI	25 - 70 mm	6 - 10 TPI
50 - 80 mm	6 TPI	35 - 90 mm	5 - 8 TPI
80 - 100 mm	4 TPI	50 - 100 mm	4 - 6 TPI
110 - 200 mm	3 TPI	80 - 150 mm	3 - 4 TPI
110 - 200 mm	3 TPI	120 - 350 mm	2 - 3 TPI
200 - 400 mm	2 TPI	250 - 600 mm	1.33 - 2 TPI

The clear grey toothing is not inlcuded in the range of products

Sawing of tubes and profiles

Diameter	40	80	100	150	200	300
Walt thickness	Toothing teeth (TPI)					
3 mm	8 - 12	8 - 12	8 - 12	8 - 12	6 - 10	6 - 10
8 mm	8 - 12	6 - 10	6 - 10	5 - 8	4 - 6	4 - 6
12 mm	6 - 10	5 - 8	5 - 8	4 - 6	4 - 6	4 - 6
15 mm	5 - 8	4 - 6	4 - 6	4 - 6	3 - 4	3 - 4
20 mm	-	4 - 6	4 - 6	4 - 5	4 - 5	4 - 5
30 mm	-	3 - 4	3 - 4	3 - 4	2 - 3	2 - 3
50 mm	-	-	-	3 - 4	2 - 3	2 - 3
100 mm	-	-	-	-	2 - 3	1,33 - 2

Grinding machines

Drill bit grinders

Belt and disc grinding machines

Double grinders

Polishing machines

Double grinders made by OPTIMUM®, a quality product for crafts and industry.
"VARIO" type with frequency converter "Made in EU"

- Heavy long-life industrial type with maintenance-free motor for permanent use
- Housing made of aluminium die casting
- Balanced rotor with quality ball bearings ensures long service life and very smooth running
- Solid, adjustable workpiece support
- Safety switch with undervoltage release and emergency stop pushbutton (up to SM 250)
- Safety guards made of fracture-proof material
- Two wide universal corundum grinding wheels
- Built according to CE standard

Fig.: **SM 250**

New

Fig.: **SM 300**

Optional accessories

OPTI suction adapter ADC1/ADC2
Nominal size inside: Ø 27 mm
Nominal size outside: Ø 31/35/40/50 mm

- **ADC1 for SM 175/SM 200**
  Item No 310 7105 **€ 47.00 plus VAT**
- **ADC2 for SM 250**
  Item No 310 7106 **€ 47.00 plus VAT**

K 36

Grinding discs
Coarse standard corundum K 36

- Ø 175 x 25 Ø 32 mm 310 7180 **11,00**
- Ø 200 x 30 Ø 32 mm 310 7210 **14,00**
- Ø 250 x 40 Ø 32 mm 310 7250 **21,00**
- Ø 300 x 50 Ø 75 mm 310 7270 **45,00**

K 80

Grinding discs
Fine standard corundum K 80

- Ø 175 x 25 Ø 32 mm 310 7185 **11,00**
- Ø 200 x 30 Ø 32 mm 310 7215 **14,00**
- Ø 250 x 40 Ø 32 mm 310 7255 **21,00**
- Ø 300 x 50 Ø 75 mm 310 7275 **45,00**

Model	**OPTI SM 175**	**OPTI SM 200**	**OPTI SM 250**	**OPTI SM 300**
Item No	310 1175	310 1200 (230 V)	-	-
€ plus VAT	**125.00**	**135.00**	-	-
Item No	-	310 1203 (400 V)	310 1253	310 1303
€ plus VAT	-	**149.00**	**219.00**	**669.00**
Model		**OPTI SM 200 VARIO**	**OPTI SM 250 VARIO**	
Item No	-	301 0220 (400 V)	301 0255	-
€ plus VAT	-	**839.00**	**1'190.00**	-
Features				
Electrical connection				
Motor power	450 W 230 V ~50 Hz	600 W ~50 Hz	1.5 kW 400 V ~50 Hz	2.2 kW 400 V ~50 Hz
Grinding discs				
Dimensions	Ø 175 x 25 Ø32 mm	Ø 200 x 30 Ø32 mm	Ø 250 x 40 Ø32 mm	Ø 300 x 50 Ø75 mm
Speed	2'850 rpm	2'850 rpm	2'850 rpm	1'450 rpm
Speed "Vario"	-	800 - 2'850 rpm	800 - 2'850 rpm	-
Dimensions				
Length x Width x Height	456 x 220 x 291 mm	461 x 246 x 310 mm	542 x 304 x 365 mm	736 x 365 x 407 mm
Net weight	14 kg	16 kg	37 kg	84 kg
Net weight "Vario"	-	21 kg	45 kg	-
Scope of delivery	Grinding disc coarse standard corundum K 36			
	Grinding disc fine standard corundum K 80			

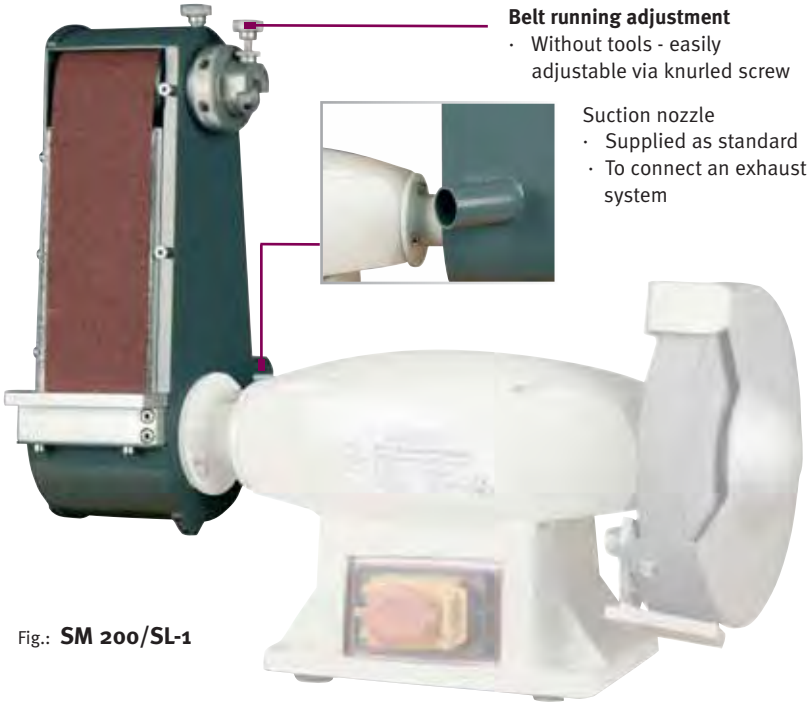
New in the product range

OPTIMUM®
MASCHINEN - GERMANY

Grinding tool for double grinding machine made by OPTIMUM®

- Useful add-on for our Optimum double grinders
- Rapid and exact grinding
- Graphite support avoids friction and heat
- Upper stop allows rapid and easy starting to grind workpieces

Grinding tool SL 75-1 for SM 200 (400 V)
Grinding tool SL 75-2 for SM 250/SM 300



Belt running adjustment
- Without tools - easily adjustable via knurled screw

Suction nozzle
- Supplied as standard
- To connect an exhaust system

Fig.: **SM 200/SL-1**

Optional accessories

Wall holder
- from SM 150 to SM 250
- Dimensions L x W x H: 332 x 300 x 230 mm
  Item No 310 7050 **€ 29.00 plus VAT**

Machine base
- from SM 150 to SM 250
- Dimensions L x W x H: 320 x 270 x 820 mm
  Item No 310 7100 **€ 69.00 plus VAT**

New

Machine base SSM
- from SM 150 to SM 250
- Shelf and cooling water tray
- Dimensions L x W x H: 345 x 300 x 785 mm
  Item No 310 7101 **€ 229.00 plus VAT**

Machine base SM 300
- from SM 150 to SM 300
- Shelf and cooling water tray
- Dimensions L x W x H: 505 x 600 x 790 mm
  Item No 310 7103 **€ 185.00 plus VAT**

Sanding belts SL-1	Item No	€ plus VAT
· Grain 40	335 7612	**4.50**
· Grain 60	335 7614	**4.50**
· Grain 80	335 7616	**4.50**
· Grain 120	335 7618	**4.50**

Sanding belts SL-2		
· Grain 40	335 7682	**5.90**
· Grain 60	335 7684	**5.90**
· Grain 80	335 7686	**5.90**
· Grain 120	335 7688	**5.90**

Dimensions

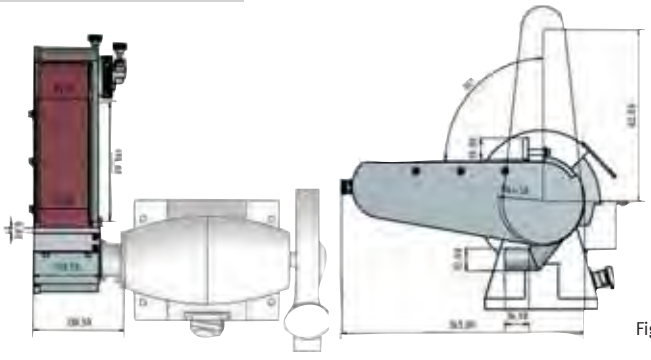


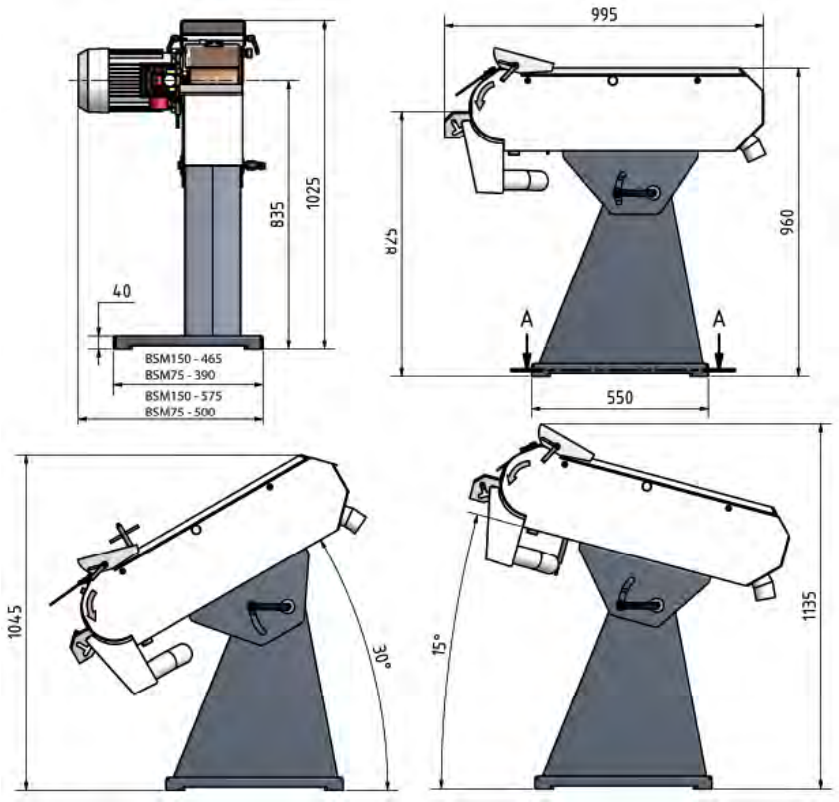
Fig.: **SL-1**

Model	SL-1	SL-2
Item No	310 7010	310 7011
€ plus VAT	**95.00**	**105.00**
Features		
Belt rotation speed at 2'850 rpm	16.4 m/sec.	16.4 m/sec.
Sanding belt		
Sanding belt length x width	75 x 762 mm	75 x 1'016 mm
Dimensions		
Nominal size suction nozzle	ø 32 mm	ø 32 mm
Slewing range of grinding tool	90°	90°
Weight	5.6 kg	7.2 kg
Scope of delivery	Sanding belt	

Belt grinders for rough, finish and form grinding of different materials

- Time-saving deburring of edges, cleaning of welding seams
- Solid and vibration-free construction
- Powerful motor
- Grinding table inclinable by 15° - 30°
- Continuously adjustable limit stop at the top allows rapid and comfortable start grinding of workpieces
  Large surface grinding surface, adjustable limit stops for universal use
- Adjustment of belt running without tools - very easily and exactly adjustable via knurled nut
- High belt rotation speed of 33 m/sec.
- Two suction nozzles to connect an extraction device supplied as standard
- Safety guard reduces flying off sparks
- Operating tools in a handy holder
- Easy-to-operate safety switch (IP 54 compliant) with low-voltage release and emergency-stop pushbutton

Dimensions



Workpiece support	Item No	€ plus VAT
· Continuously adjustable; allows rapid start grinding of the workpieces		
· For BSM 75	335 7881	**16.90**
· For BSM 150	335 7891	**20.90**

Sanding belts BSM 75	Item No	€ plus VAT
· Grain 40*	335 7642	**35.00**
· Grain 60*	335 7644	**35.00**
· Grain 80*	335 7646	**35.00**
· Grain 120*	335 7648	**35.00**

Sanding belts BSM 150		
· Grain 40*	335 7672	**59.00**
· Grain 60*	335 7674	**59.00**
· Grain 80*	335 7676	**59.00**
· Grain 120*	335 7678	**59.00**

*Packing and price unit 5 pcs.

Model	Opti BSM 75	Opti BSM 150
Item No	332 1075	332 1150
€ plus VAT	**999.00**	**1'219.00**
Features		
Electrical connection		
Motor power	3 kW 400 V ~50 Hz	4 kW 400 V ~50 Hz
Technical data		
Speed	3'000 rpm	
Belt rotation speed	33 m/sec.	
Sanding belt		
Dimension sanding belt	75 x 2'000 mm	150 x 2'000 mm
Dimensions		
Nominal size suction nozzle inside	Ø 57 mm	
Nominal size suction nozzle outside	Ø 60 mm	
Net weight	102 kg	125 kg
Scope of delivery	Sanding belt grain 60	
	Hexagon wrench	

Belt running adjustment
- Without tools - easily adjustable via knurled screw

Emergency-stop pushbutton

With German switch/plug combination

Operating tool
- Included
- Handy holder

Face grinding surface
- End-to-end and opened at the rear
- Also best appropriated to machine long workpieces

Spark protection
- Reduces flying of sparks

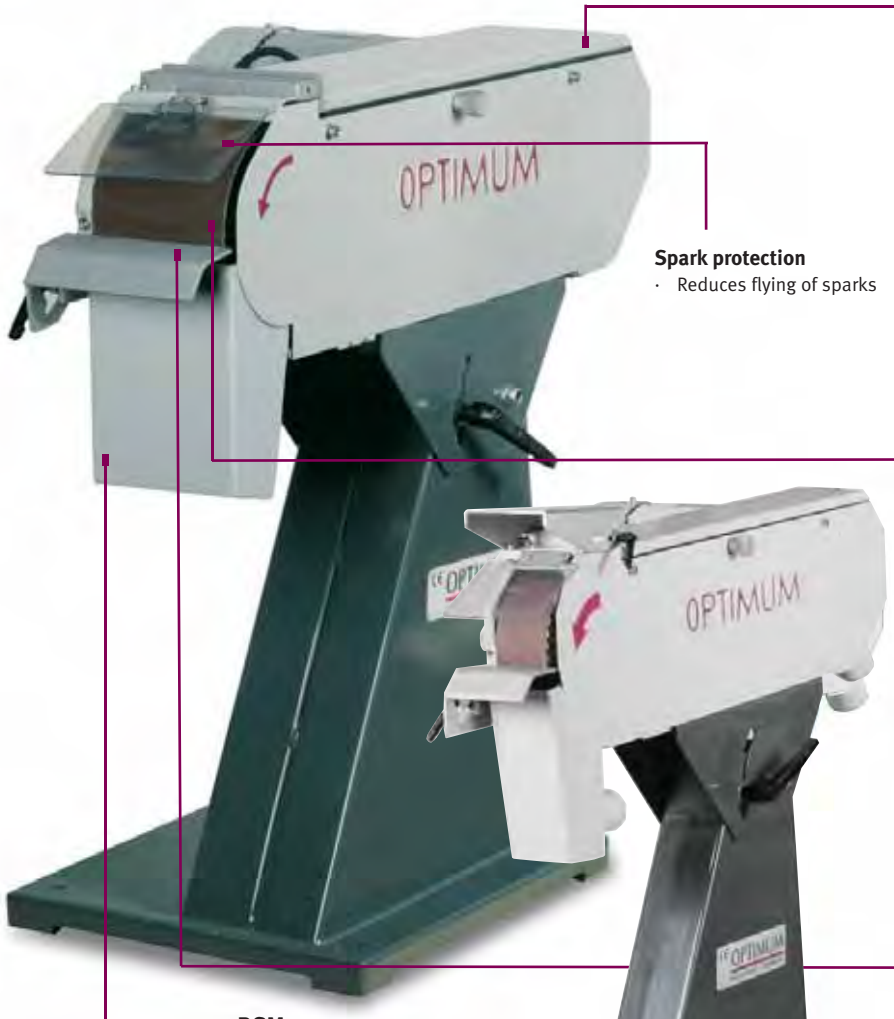


Fig.: **BSM 150**

Rollers
- Rubberized
- Smooth running
- Band does not slip through

High belt speed
- 33 m/sec.
- Rapid material removal

Workpiece support
- Adjustable inclination
- Allows grinding at an adequate angle

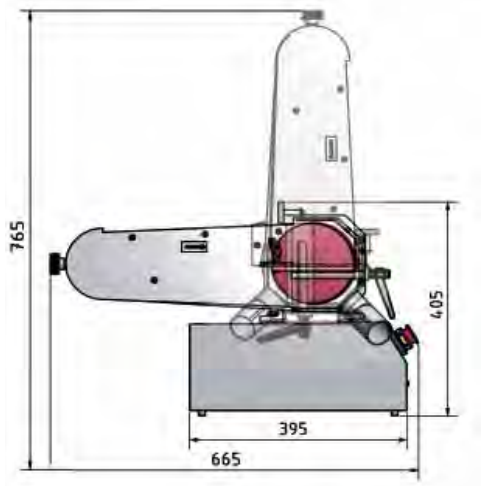
Suction nozzle
- Front and rear
- To connect an extraction device

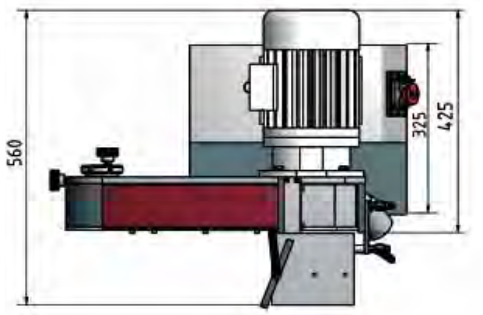
Fig.: **BSM 75**

Universally applicable belt and disc grinding machine with slewable grinding arm to debur and grind surfaces and contours

- Grinding belt clamping manually adjustable
- Grinding belt easily replaceable
- Fine adjustment for parallel belt operation
- Slewable grinding table, adjustable via clamping lever
- Easy-to-operate safety switch (IP 54 compliant) with lockable emergency-stop pushbutton
- Powerful motor
- Suction nozzle supplied as standard
- Built according to CE standards

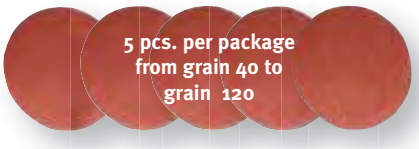
Dimensions





Model	Opti DBS 75
Item No	331 1075
€ plus VAT	**595.00**
Features	
Electrical connection	
Motor power	1.1 kW/400 V ~50 Hz
Speed	1'410 rpm
Belt speed	11 m/sec.
Sanding belt	
Dimension sanding belt	75 x 1180 mm
Grinding disc	
Dimension grinding disc	Ø 150 mm
Dimensions	
Nominal size suction nozzle inside	Ø 47 mm
Nominal size suction nozzle outside	Ø 50 mm
Grinding rest	85 x 215 mm
Slewing range belt grinding table	90°
Length x Width x Height	665 x 560 x 405 (765) mm
Net weight	62 kg
Scope of delivery	Sanding belt grain 60
	Grinding disc Grain 60

Sanding belts	Item No	**€ plus VAT**
· 75 x 1'180 mm		
Grain 40*	335 7622	**24.90**
Grain 60*	335 7624	**24.90**
Grain 80*	335 7626	**24.90**
Grain 120*	335 7628	**24.90**
Velcro disc	335 7802	**4.90**



Grinding disc		
· Ø 150 mm		
Grain 40*	335 7832	**3.90**
Grain 60*	335 7834	**3.90**
Grain 80*	335 7836	**3.90**
Grain 120*	335 7838	**3.90**

***Packing and price unit 5 pcs.**

The solid polishing machines for the finest surface treatment of metal workpieces

- Heavy, long-life industrial type with maintenance-free motor
- Housing made of aluminium die casting
- Balanced rotor with quality ball bearings ensures long service life and very smooth running
- Solid, adjustable workpiece support
- Magnetic switch with lockable emergency-stop pushbutton
- Two wide polishing disc included in the scope of delivery
- Built according to CE standard

Balanced rotor
- Long service life
- Smooth running
- Quality ball bearings

Scope of delivery
- Soft polishing disc
- Hard polishing disc

Model	OPTI PSM 200 polish	OPTI PSM 250 polish
Item No (230 V)	310 1320	-
€ plus VAT	**189.00**	-
Item No (400 V)	310 1323	310 1325
€ plus VAT	**199.00**	**259.00**
Features		
Electrical connection		
Motor power	600 W ~50 Hz	1.5 kW 400 V ~50 Hz
Technical data		
Speed	2'850 rpm	2'850 rpm
Dimension polishing disc	Ø200 x 20 Ø 16 mm	Ø200 x 25 Ø 20 mm
Dimensions		
Length	200 mm	250 mm
Width	550 mm	630 mm
Height	260 mm	320 mm
Net weight	14 kg	23 kg
Scope of delivery	Soft polishing disc	
	Hard polishing disc	

Optional accessories

Wall holder
- Cooling water tray
- Dimensions L x W x H: 332 x 300 x 230 mm

Item No 310 7050 **€ 29.00 plus VAT**

Machine base 1
- Dimensions L x W x H: 320 x 270 x 820 mm

Item No 310 7100 **€ 69.00 plus VAT**

Machine base SSM 2
- Shelf and cooling water tray
- Dimensions L x W x H: 345 x 300 x 785 mm

Item No 310 7101 **€ 229.00 plus VAT**

Soft polishing discs
- Ø 200 x 20 Ø16 mm

Item No 310 7320 **€ 15.90 plus VAT**
- Ø 250 x 25 Ø20 mm

Item No 310 7330 **€ 19.90 plus VAT**

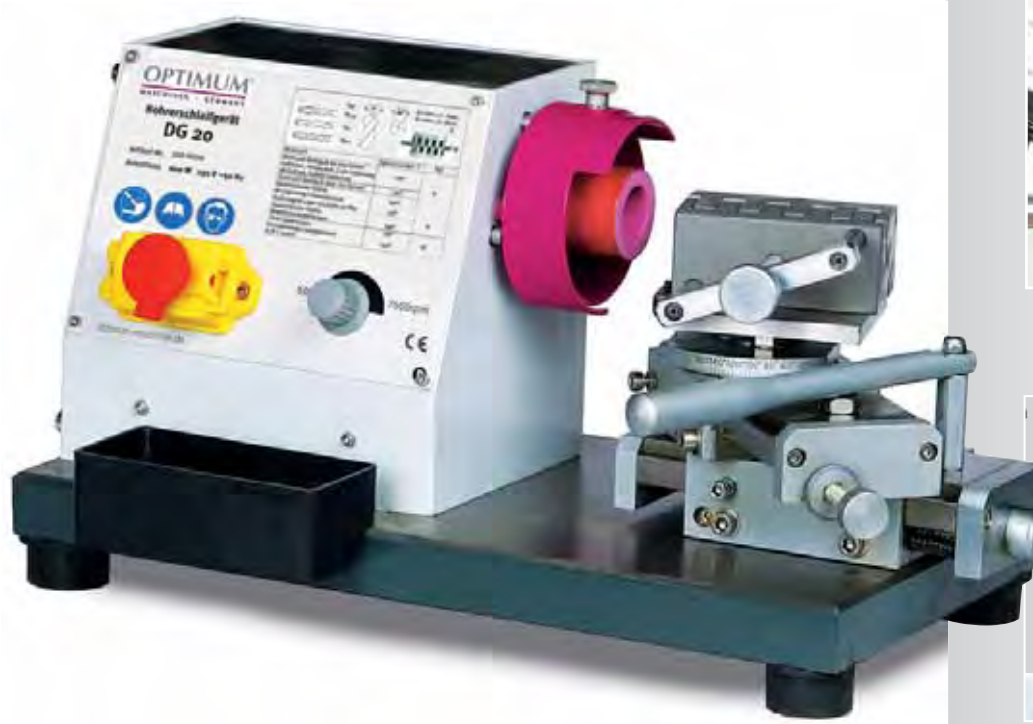
Soft polishing discs
- Ø 200 x 20 Ø16 mm

Item No 310 7321 **€ 15.90 plus VAT**
- Ø 250 x 25 Ø20 mm

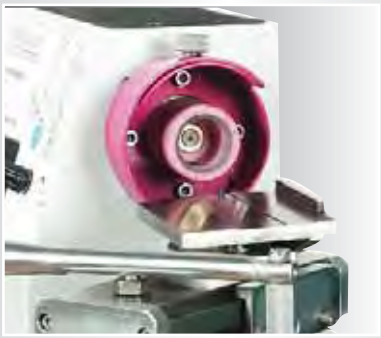
Item No 310 7331 **€ 19.90 plus VAT**

Drill bit grinder with infinitely variable speed control and exact repeat accuracy

- Large grinding range of twist drills from 3 - 20 mm
- Solid cast iron base plate with high dead weight provides for low-vibration running
- Balanced rotor with quality ball bearings ensures long service life and very smooth running
- Magnetic switch with lockable emergency-stop pushbutton
- Exact repeat accuracy due to prism-guided feed
- Infinitely variable speed control for different materials
- Angle adjustment for all twist drill types is possible
- Prism holder for precise centring of the workpiece
- Rubber cap to protect against dust and water



Wide grinding range
- Twist drills from 3 to 20 mm



Cup wheel
- Self-trimming
- Trueing is not required

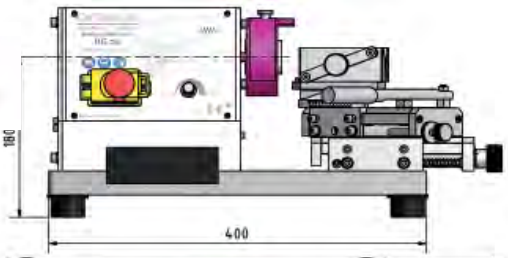
Prism support
- Solid
- For exact centring and safe fixing

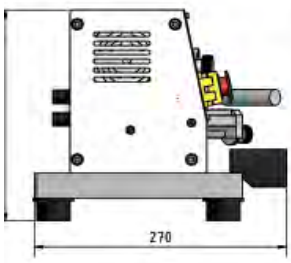
Model	Opti DG 20
Item No	310 3004
€ plus VAT	**599.00**
Features	
Electrical connection	
Motor power	600 W 230 V ~50 Hz
Technical data	
Speed infinitely variable	1'400 - 7'600 rpm
Grinding speed	16 m/s
Grinding capacity drill	3 - 20 mm
Angle of the head sharpening	90° - 150°
Cup wheel	
Outside Ø	40 mm
Inside Ø	26 mm
Thread Ø	M 10
Depth of the cup wheel	22 mm
Dimensions	
Length	490 mm
Width	270 mm
Height	235 mm
Net weight	26 kg
Scope of delivery	Cooling water tray Cup wheel

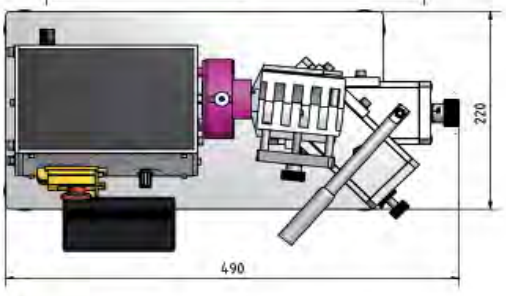
Accessories

- Cup wheel red
  Item No 310 7120
  € 14.00 plus VAT

- Cup wheel green
  for carbide metal
  Item No 310 7121
  € 8.90 plus VAT







Computerized Numerical Control

CNC Add-on kits milling

CNC Add-on kits turning

CNC Controllers

CNC Housings

CNC Lathes

CNC Milling machines

The step motor control system combines all required components to automate a CNC machine tool in one device

- Compact, elaborated housing, including a high-performance power supply unit, line filter and powerful forced air circulation
- Simple upgrading for up to 6 control cards for the operation of two separate machines
- Perfectly appropriate for pcdreh® and MegaNC and also compatible with similar software
- 4 separately switchable, potential-free relay outputs in the power section (Controller VI)
- Optical axis control by LED's of different colours
- All connections, connectors and service openings are provided at the front, therefore they can be easily installed in other housings
- High-grade signal processing for trouble-free operation
- Monitoring of all control cards by an integrated control
- Easy assembly of the control cards just by opening the slot
- Plug & Play control cards
- Operating current and holding current are separately adjustable for the corresponding step motor
- All outputs to step motors are of short-circuit-proof type
- Integrated switch off for all three axes in case of malfunction of a control card
- Largely dimensioned fan, little heat development
- The controller works in semi-step operation
- Signal preparation (multi signal, single signal)
- Mains cable
- LPT port adapter multi signal/single signal
- LPT connection cable

Additional functions in comparison of the CNC
- Controller VI to the CNC Controller III
- Connection for reference switch 3 axes (only for Port 1)
- 4th axis controllable (e.g. circular dividing table)

CNC-Controller III	40 V
Item No	357 1951
€ plus VAT	**249.00**
Features	
Card slots	3
Connection	230 V ~50 Hz 300 VA
Dimensions L x W x H:	295 x 230 x 145 mm

CNC-Controller VI	40 V
Item No	357 1950
€ plus VAT	**329.00**
Features	
Card slots	6
Relay outputs	4 potential-free
	Input for universal reference switch
Connection	230 V ~50 Hz 300 VA
Dimensions L x W x H:	540 x 275 x 125 mm

CNC control card	
Item No	357 1960
€ plus VAT	**125.00**

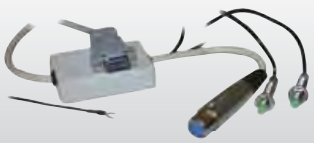
- X-, Y- or Z-Axis
- Pluggable control card with largely dimensioned coolant body
- Adjustable current and holding torque

Universal reference switch kit milling	
Item No	357 1980
€ plus VAT	**129.00**

- For Controller VI/Controller IV
- With universal add-on parts
- High repeat accuracy
- Contactless
- For assembling to the machine, machine zero point
- Protection class IP 65

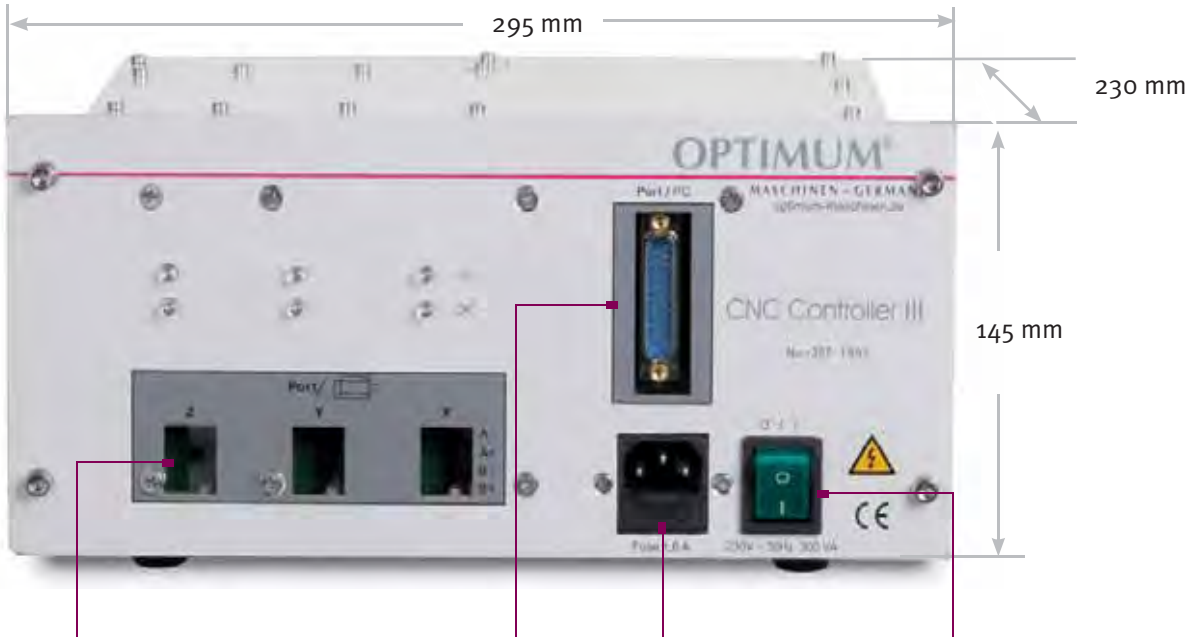
Universal reference switch kit turning	
Item No	357 1966
€ plus VAT	**129.00**

- For Controller VI
- Including connection for incremental encoder
- With universal add-on parts
- High repeat accuracy
- Contactless
- For assembling to the machine, machine zero point
- Protection class IP 65



Shop assembly kit of reference switches	
Item No	900 0506
€ plus VAT	**99.00**

CNC - Controller III



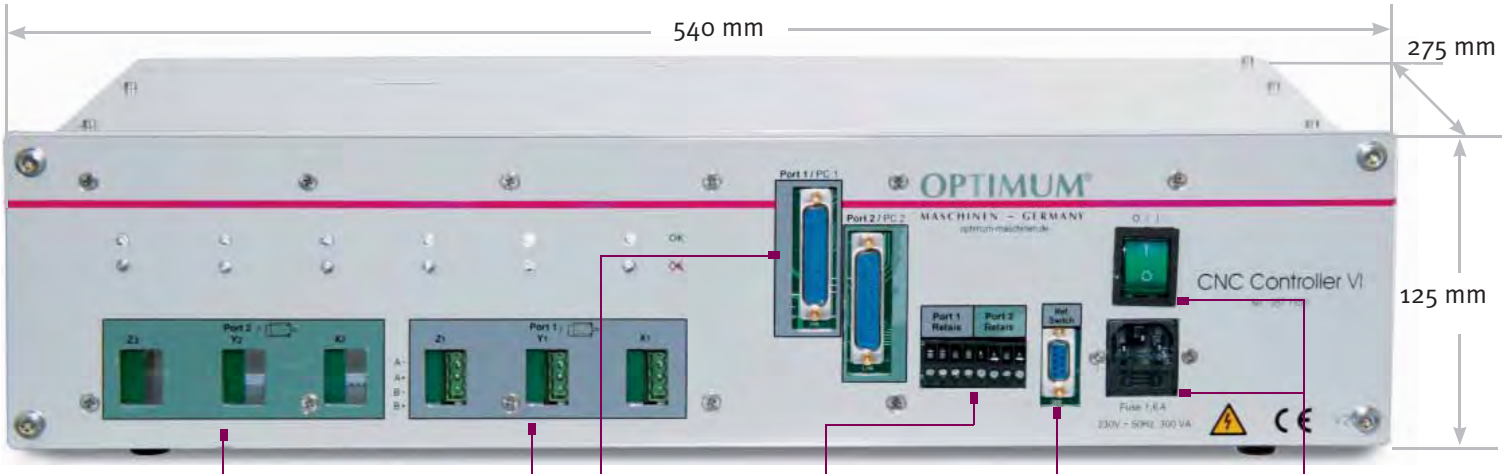
Connecting plug step motors
- For maximum three slots
- Optical axis control by LED's of different colours

25-pole D-Sub plug
- Connection to the PC for one machine

Mains plug
- With fuse from the front

ON/OFF switch
- At the front side easily operated

CNC - Controller VI



Connecting plug step motors
- Two separate ports with three slots each
- Optical axis control by LED's of different colours

25-pole D-Sub plug
- Two separate connections to the PC for two different machines

Relay connections
- Two separate connections
- (connection for e.g. lamp or vacuum cleaner)

9-pole D-Sub plug
Connection for reference switch

ON/OFF switch
- At the front side easily operated
- Mains plug
- With fuse from the front

Modern powerful microprocessor control combines all required components to automate large CNC machine tools in one device

- Compact, elaborated housing, including a high-performance power supply unit, line filter and powerful forced air circulation
- Perfectly appropriate for pcdreh® and MegaNC and also compatible to similar software
- 4 separately switchable, potential-free relay outputs in the power section
- Optical axis control by LED's of different colours
- All connections, connectors and service openings are provided at the front, therefore they can be easily installed in other housings
- High-grade signal processing for trouble-free operation
- Monitoring of all control cards by integrated control
- Performance values up to 130 volts and 8A operating current
- Plug & Play control cards
- Operating current and holding current are separately adjustable for the corresponding step motor
- All outputs to step motors are of short-circuit-proof type
- Integrated switch off for all four axes in case of malfunction of a control card
- Largely dimensioned fan, little heat development
- Connection for a reference switch (3 axes)
- The controller works in semi-, okta-, and semiquaver-step operation
- Signal preparation (multi signal, single signal)
- It is possible to connect an external emergency-stop

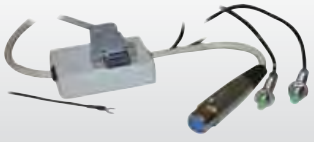
CNC-Controller incl. 3 CNC control cards "high power"

CNC - Controller IV "high power" incl. 3 CNC control cards	
Item No	357 1953
€ plus VAT	**1'490.00**
Features	
Card slots	4
Relay outputs	4 potential-free, max. 10 A per relay
	External emergency-stop input
	Input for universal reference switch
Connection	230 V ~50 Hz 300 VA
Dimensions L x W x H:	545 x 270 x 165 mm
Scope of delivery	
· 3 CNC control cards "High Power"	
· Mains cable	
· LPT port adapter multi signal/single signal	
· LPT connection cable	

CNC control card "high power"	
Item No	357 1962
€ plus VAT	**295.00**
· Universal for all axes (one card is required for each axis)	
· Pluggable control card with largely dimensioned coolant body	
· Adjustable current and holding torque	

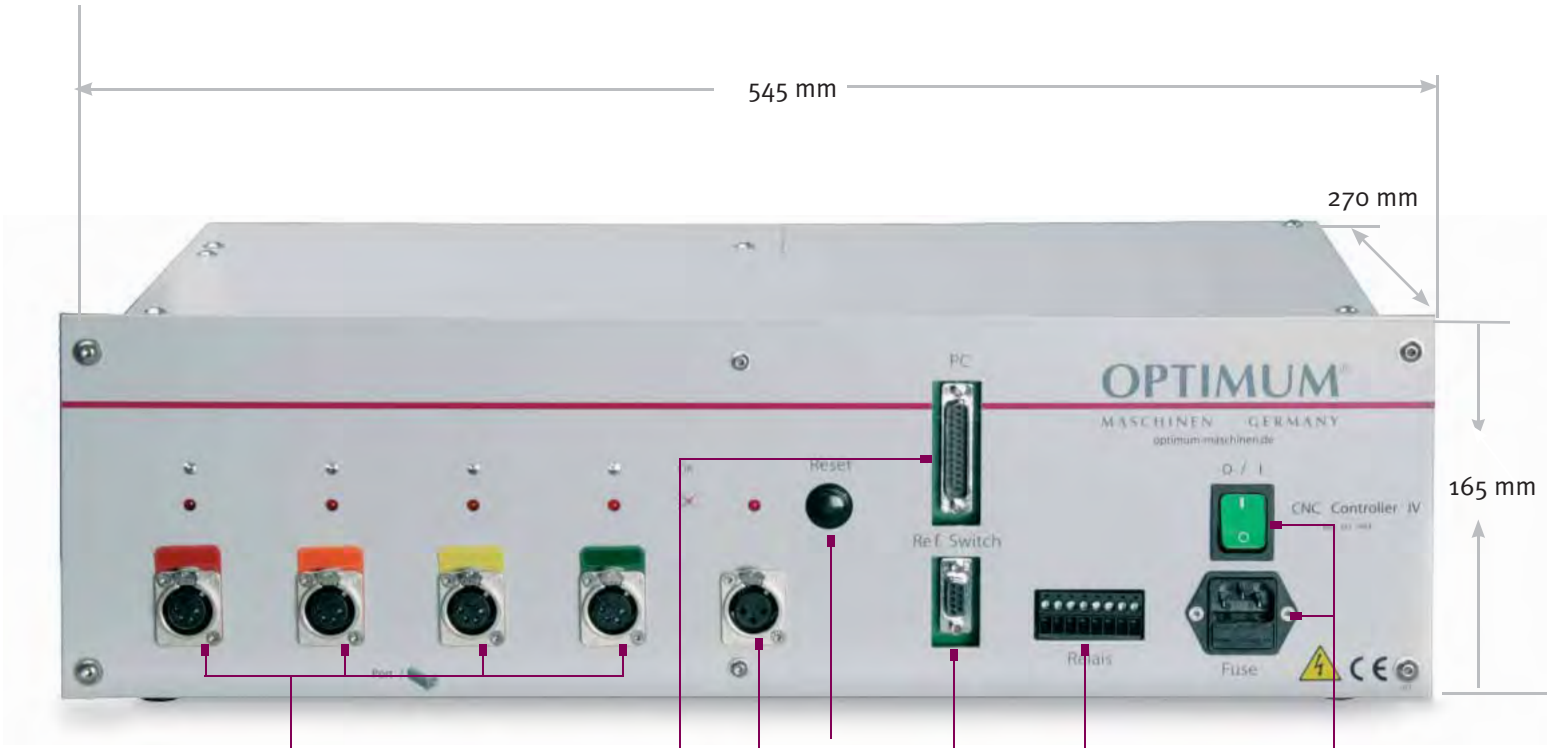
Universal reference switch kit milling	
Item No	357 1980
€ plus VAT	**129.00**
· For Controller VI/Controller IV	
· With universal add-on parts	
· High repeat accuracy	
· Contactless	
· For assembling to the machine, machine zero point	
· Protection class IP 65	

Universal reference switch kit turning	
Item No	357 1967
€ plus VAT	**129.00**
· For Controller IV	
· Including connection for incremental encoder	
· With universal add-on parts	
· High repeat accuracy	
· Contactless	
· For assembling to the machine, machine zero point	
· Protection class IP 65	



Shop assembly kit of reference switches	
Item No	900 0506
€ plus VAT	**99,00**

CNC - Controller IV "high power"



Connecting plug step motors
- **Z - Y - X - X2 - axis**
- Optical axis control by LED's of different colours

25-pole D-Sub plug
- Connection to the PC for one machine

Connecting plug
- for Emergency-stop pushbutton

Reset key
- Reset to defined initial status

9-pole D-Sub plug
- Connection for reference switch

Relay connection
- Connection for e.g. lamp or vacuum cleaner

ON/OFF switch
- At the front side easily operated

Mains plug
- With fuse from the front

Ventilator
- Largely dimensioned
- Little heat development

4 control card slots
- Easy to assemble slots
- Simply open slot and insert control card

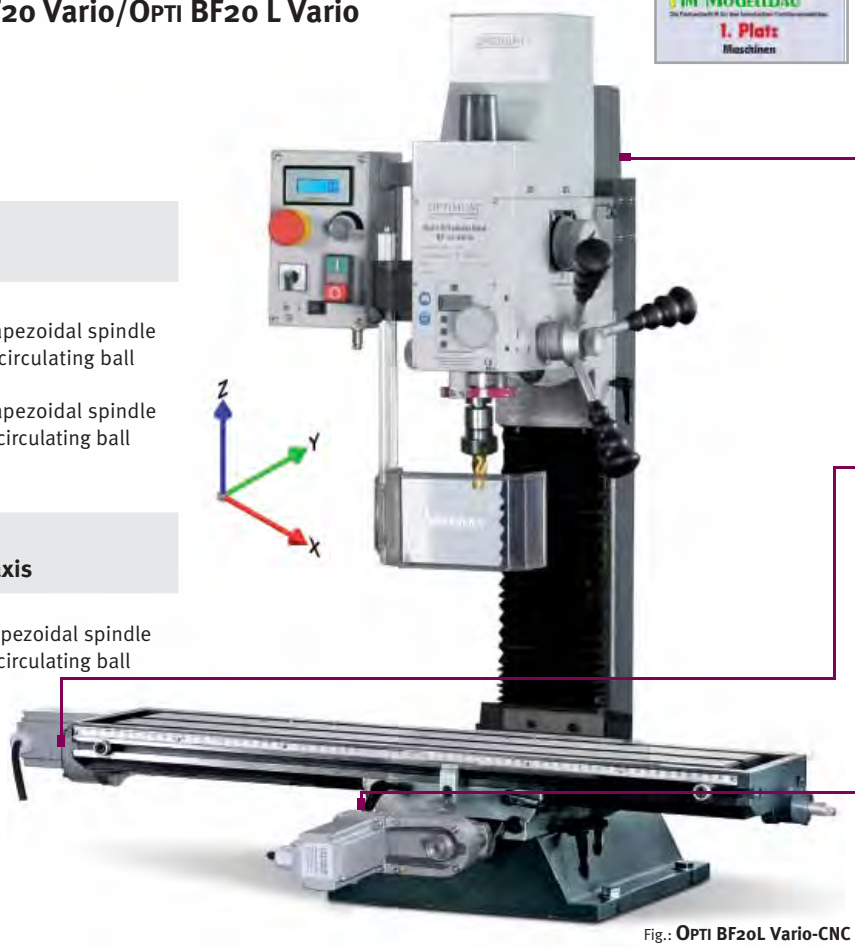
Complete and CNC add-on kit for milling suitable for Opti BF20 Vario/Opti BF20 L Vario

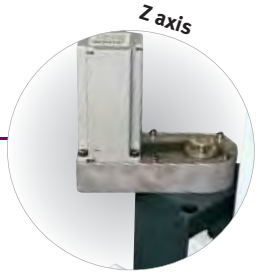
Torque **4,4 Nm**
on the spindle **Z axis**

Travel speed*
- max. 12 mm/sec. with trapezoidal spindle
- max. 24 mm/sec. with recirculating ball screw
- max. 14 mm/sec. with trapezoidal spindle
- max. **24** mm/sec. with recirculating ball screw

Torque **2,75 Nm**
on the spindle **X- und Y axis**

Travel speed*
- max. **14** mm/sec. with trapezoidal spindle
- max. **25** mm/sec. with recirculating ball screw





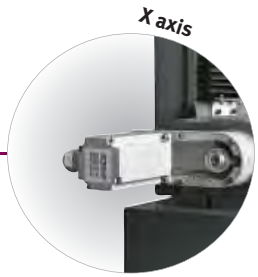


Fig.: **Opti BF20L Vario-CNC**

CNC complete kit for Opti BF20 Vario / Opti BF20L Vario *	
Item No	353 9020
€ plus VAT	**1'750.00**

Consisting of:
• 1 x Controller VI
• 3 x Control cards 40 V
• 1 x Reference switch kit milling
• 1 x CNC - add-on kit MT F20DP
Scope of delivery: Add-on kit MK F20DP
• Three step motors 2.2 Nm, 3A (bipolar)
• Three assembly housings incl. covers
• Three driving belts
• Six toothed pulleys
• Two spacers
• One assembly ring X -axis
• 7 meters screening cable
• Screw kit
• Including assembly (without software)

* Important note:
- Speeds have been determined by the software "NCDrive" and current Opti BF20 Vario and the values may deviate upward or downward depending on the used software system and the operating method of the motor.
- The indicated travels can change when using ball screws.
- The standard EN2006/42 EC is only fulfilled with the housing SHC, the electronic kit and assembly in shop by an authorised shop.
- The machine of CNC type is incomplete without SHC and safety kit, thus the CE directive is not fulfilled.
- We imperatively recommend you to follow the instructions given by our specialist staff.
- For optimum shipment we invoice a packaging flat rate of € 55.00.

Complete kit recirculating ball screws	Item No	€ plus VAT
Consisting of:		
• 3 x ball screw with spindle nut		
• Prepared for assembly		
for **Opti BF20 Vario - without assembly**	357 4450	**790.00**
for **Opti BF20 Vario - with assembly**	353 9220	**1'230.00**
for **Opti BF20L Vario - without assembly**	357 4451	**810.00**
for **Opti BF20L Vario - with assembly**	353 9221	**1'250.00**

Individual **recirculating ball screws**		
• with spindle nuts		
X axis for **Opti BF20 Vario** (586 mm)	357 4303	**269.00**
X axis for **Opti BF20L Vario** (788 mm)	357 4304	**289.00**
Y axis (350 mm)	357 4301	**249.00**
Z axis (458 mm)	357 4302	**289.00**

Shop assembly recirculating ball screw	900 0504	**195.00**
• For each axis		

CNC-Add-on kit MK F20DP	357 0020	590.00
• Step motors with integrated terminal board		
• Especially smooth running due to little self-resonance		
• Protection class IP 54 enclosed motor		
• Extended axle shaft		
• 400 steps per rotation		
• Toothed belt of HTD type (High Tork Drive) by Gates		

Scope of delivery:

Three step motors 2.2 Nm 3A bipolar, three assembly housings incl. covers, six pulleys, two nuts,
three toothed belts, one bushing, one distance ring, screw kit,
15 meters screening cable, mounting instructions

Shop assembly CNC-add-on kit MK F20DP	900 0500	300.00
• "Step motors" for all 3 axes		

CNC - Controller III 40V	357 1951	249.00
• With 3 card slots - without control cards		
• Dimensions L x W x H: 295 x 230 x 145 mm		

CNC - Controller VI 40V	357 1950	329.00
• With 6 card slots - without control cards		
• Dimensions L x W x H: 540 x 275 x 125 mm		

CNC control card	357 1960	125.00
• X- Y- or Z-axis: one card each		
• one card per axis is required		

„CNC-Controller III / CNC-Controller VI“ on page 126

Housing SHC		
• The design impresses since it is compact and easy-to-operate		
• Housing can be removed at the top		
• Complete unit is mobile		
• Clear Macrolon panes		
• Base as cabinet e.g for Controller or PC with cable duct		
SHC 1 for **Opti BF20 Vario**	353 9091	890.00
SHC2 for **Opti BF20L Vario**	353 9092	990.00

„Housing SHC“ on page 140

"Safety kit"	353 9085	2'490.00
· Protects the user and the machine		
· Fulfills the standard EN2006/42 EC with optimum housing SHC		
· Including assembly		
· Safety PLC		
· Safety switch		

CNC Basic software "NCdrive"	358 2110	300.00
• This is an executive program - no plotting program		
• NC programs can be imported (from 2D or 3D programs) or can be directly entered to DIN 66025		
• CD-Rom incl. NClyzer		
• Power supply unit		
• Connection cable RS 232		
• NCdrive as external box		

Fig.: NCdrive als externe Box

MegaNC 2010 - 2D CAD program	358 2112	750.00
• In order to work with the machine, the "NCdrive" CNC basic software needs to be available		

MegaNC 2010 - 3D CAD program	358 2114	980.00
• In order to work with the machine, the "NCdrive" CNC basic software needs to be available		

pcdreh® for Windows Basis-Version for Milling and turning	358 2025	380.00
• Hardware interface		
• Power supply unit and all cables for serial connection		
• CD-Rom		

pcdreh® for Windows milling - Plus	358 2060	150.00
• Upgrade software of pcdreh® basic version		
Additional functions:		
• Axes can be referenced via a switch		
• Manual or automatic changing of tools, incl. tool management		
• Load and edit DIN-ISO files		
• Four-axis processing		

Fig.: Dongle

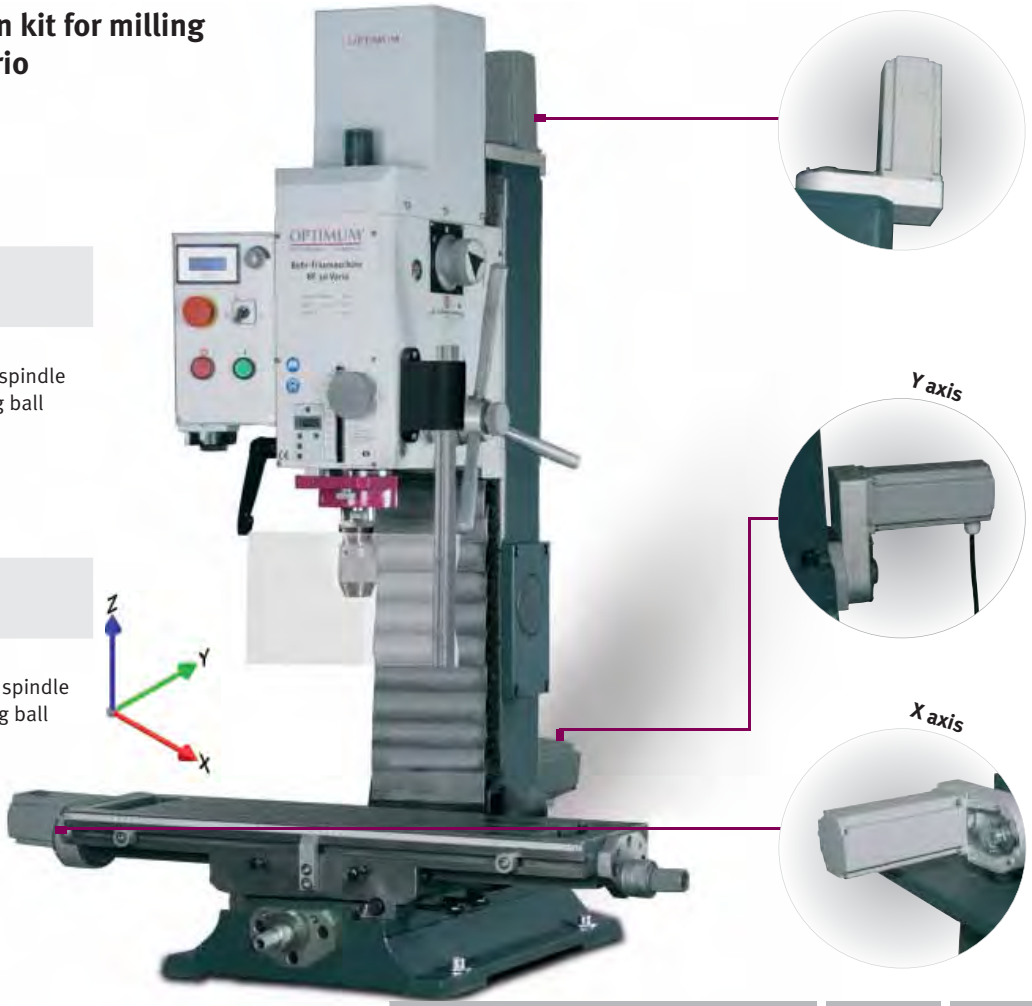
USB-Adapter RS232		
For PCs without RS232 connection		
USB Adapter for **NC Drive**	357 1969	19.90
USB Adapter for **PC Dreh and Siemens**	357 1968	19.90

Universal reference switch kit	357 1980	129.00
• For CNC-Controller IV / CNC-Controller VI		
• With universal add-on parts for up to three axes		
• High repeat accuracy		
• Contactless		
• For assembling to the machine, machine zero point		
• Protection class IP 65		

Shop assembly reference switch kit	900 0506	99.00

CNC instruction	900 0510	500.00
• One-day instructions, complete cabeling and configuration of the control hardware, installation of the CNC software on a customer PC and short briefing in using hard- and software, instructions on-site		
• Instruction on-site plus travel cost and overnight stay, if required		

Complete and CNC add-on kit for milling suitable for OPTI BF30 Vario



Torque **11,6 Nm**
on the spindle **Z axis**

Travel speed*
- max. **14** mm/sec. with trapezoidal spindle
- max. **18** mm/sec. with recirculating ball screw

Torque **11,6 Nm**
on the spindle **X- and Y axis**

Travel speed*
- max. **16** mm/sec. with trapezoidal spindle
- max. **20** mm/sec. with recirculating ball screw

CNC-Komplettsatz for OPTI BF30 Vario *	
Item No	353 9023
€ plus VAT	**2'890.00**

Consisting of:
- 1 x Controller IV "high power"
- 3 x Control cards "high power"
- 1 x Reference switch kit milling
- 1 x CNC - Add-on kit MK F30DP

Scope of delivery: Add-on kit MK F30DP
- Three step motors 8 Nm
- Three assembly housings incl. covers
- Six toothed pulleys
- Three toothed belts
- One distance ring
- Two nuts
- One bushing
- 15 meters screening cable
- Screw kit
- Including assembly (without software)

Important note:
- The indicated speeds demonstrate a nominal value, which had been determined by the current Opti BF30 Vario. These values may deviate upward or downward depending on the used software system and the operating method of the motor or the load of the motor.
- The indicated travels can change when using ball screws.
- The standard EN2006/42 EC is only fulfilled with the housing SHC, the electronic kit and assembly in shop by an authorised shop.
- The machine of CNC type is incomplete without SHC and safety kit, thus the CE directive is not fulfilled.
- We imperatively recommend you to follow the instructions given by our specialist staff.
- For optimum shipment we invoice a packaging flat rate of € 65.00.

Complete kit recirculating ball screws	Item No	**€ plus VAT**
Consisting of:		
• 3 x ball screw with spindle nut		
• Assembly kit of recirculating ball screws for all three axes		
without assembly	357 4455	**850.00**
with assembly	353 9223	**1'490.00**

Individual recirculating ball screws		
• with spindle nuts		
X axis Ø 20 mm	357 4311	**299.00**
Y axis Ø 20 mm	357 4312	**289.00**
Z axis Ø 25 mm	357 4313	**289.00**

Shop assembly	900 0523	**249.00**
for each axis		

CNC-Add-on kit MK F30DP	357 0030	890.00

- Step motors with integrated terminal board
- Especially smooth running due to little self-resonance
- Protection class IP 54 enclosed motor
- Extended axle shaft
- 400 steps per rotation
- Toothed belt of HTD type (High Tork Drive) by Gates

Scope of delivery:

Three step motors 8 Nm, three assembly housings incl. covers, six pulleys, three toothed belts, one bushing, one distance ring, two nuts, 15 meters screening cable, screw kit, mounting instructions

Shop assembly CNC-add-on kit MK F30DP	900 0603	350.00

- "Step motors" for all 3 axes

CNC - Controller IV "high power"	357 1953	1'490.00

- **included 3 control cards "high power"**
- Controller with 4 card slots
- 4 potential-free relay outputs
- External emergency-stop input
- Input for universal reference switch
- Connection 230 V ~50 Hz, 300 VA
- Dimensions L x W x H: 545 x 270 x 165 mm

Optional CNC control card "high power"	357 1962	295.00

one card per axis is required

Fig.: Controller IV "high power"

Fig.: Steuerkarte

„CNC-Controller IV "high power"“ on page 128

Housing SHC 3	353 9093	1'890.00

- Compact housing design
- Lateral part of the housings can be hinged, allowing easy access to the machine
- From three sides it is easily to view the working area through clear Macrolon panes
- Base is designed on two sides
- Deposit for laptop computers

„Housing SHC“ on page 140

"Safety kit"	353 9085	2'490.00

- Protects the user and the machine
- Fulfills the standard EN2006/42 EC with optimum housing SHC
- Including assembly
- Safety PLC
- Safety switch

CNC Basic software "NCdrive"	358 2110	300.00

- This is an executive program - no plotting program
- NC programs can be imported (from 2D or 3D programs) or can be directly entered to DIN 66025
- CD-Rom incl. NClyzer
- Power supply unit
- Connection cable RS 232
- NCdrive as external box

Fig.: NCdrive als externe Box

MegaNC 2010 - 2D CAD-program	358 2112	750.00

- In order to work with the machine, the "NCdrive" CNC basic software needs to be available

MegaNC 2010 - 3D CAD-program	358 2114	980.00

- In order to work with the machine, the "NCdrive" CNC basic software needs to be available

pcdreh® for Windows Basis-Version for Milling and turning	358 2025	380.00

- Hardware interface
- Power supply unit and all cables for serial connection
- CD-Rom

pcdreh® for Windows milling - Plus	358 2060	150.00

- Upgrade software of pcdreh® basic version

Additional functions:

- Axes can be referenced via a switch
- Manual or automatic changing of tools, incl. tool management
- Load and edit DIN-ISO files
- Four-axis processing

Fig.: Dongle

USB-Adapter RS232

- For PCs without RS232 connection

USB Adapter for **NC Drive**	357 1969	19.90
USB Adapter for **PC Dreh and Siemens**	357 1968	19.90

Universal reference switch kit	357 1980	129.00

- For CNC-Controller IV / CNC-Controller VI
- With universal add-on parts for up to three axes
- High repeat accuracy
- Contactless
- For assembling to the machine, machine zero point
- Protection class IP 65

Shop assembly reference switch kit	900 0506	99.00

CNC instruction	900 0510	500.00

- One-day instructions, complete cabeling and configuration of the control hardware, installation of the CNC software on a customer PC and short briefing in using hard- and software, instructions on-site
- Instruction on-site plus travel cost and overnight stay, if required

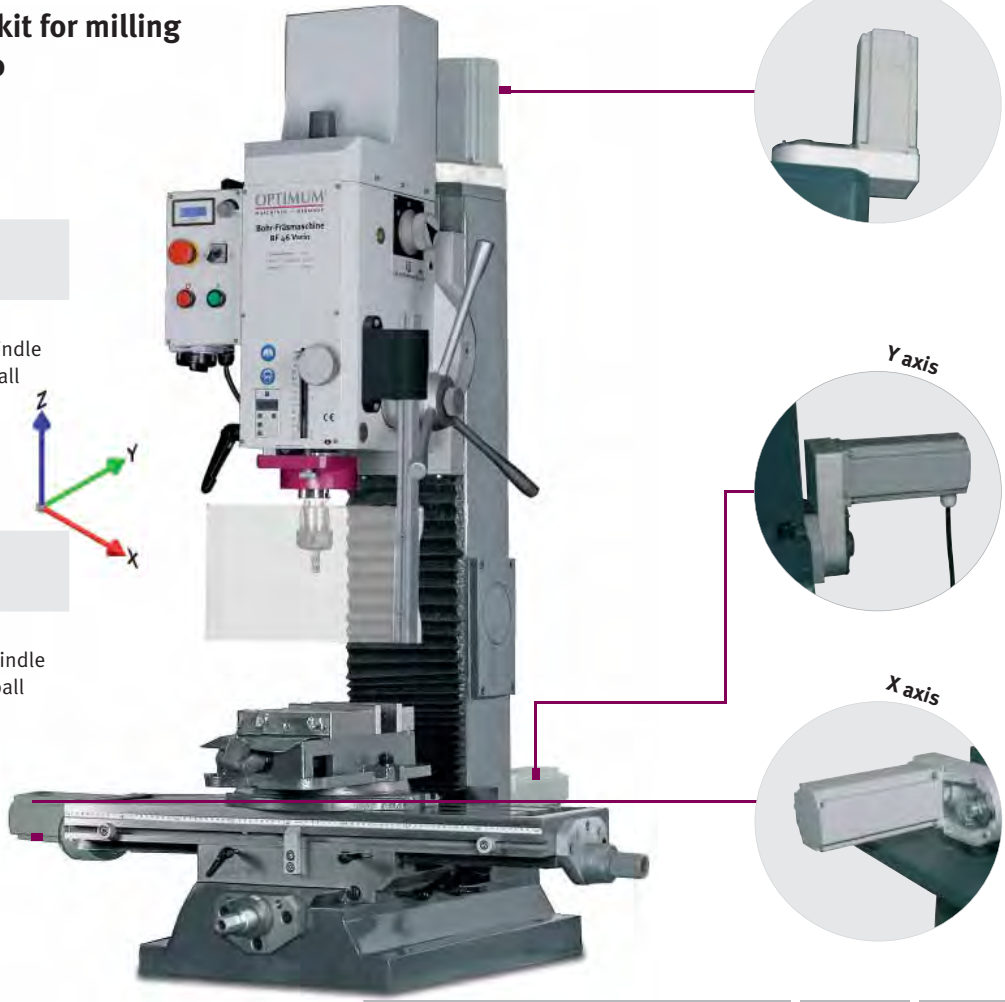
Complete and CNC add-on kit for milling suitable for OPTI BF46 Vario

Torque **17,4 Nm**
on the spindle **Z axis**

Travel speed*
- max. **14** mm/sec. with trapezoidal spindle
- max. **18** mm/sec. with recirculating ball screw

Torque **17,4 Nm**
on the spindle **X- and Y axis**

Travel speed*
- max. **16** mm/sec. with trapezoidal spindle
- max. **20** mm/sec. with recirculating ball screw



CNC complete kit for OPTI BF46 Vario *	
Item No	353 9024
€ plus VAT	**2'890.00**

Consisting of:
- 1 x Controller IV “high power”
- 3 x Control cards “high power”
- 1 x Reference switch kit milling
- 1 x CNC - Add-on kit MK F46DP

Scope of delivery: Add-on kit MK F46DP
- Three step motors 12 Nm
- Three assembly housings incl. covers
- Six toothed pulleys
- Three toothed belts
- One distance ring
- Two nuts
- One bushing
- 15 meters screening cable
- Screw kit
- Including assembly (without software)

Important note:
- The indicated speeds demonstrate a nominal value, which had been determined by the current Opti BF46 Vario. These values may deviate upward or downward depending on the used software system and the operating method of the motor or the load of the motor.
- The indicated travels can change when using ball screws.
- The standard EN2006/42 EC is only fulfilled with the housing SHC, the electronic kit and assembly in shop by an authorised shop.
- The machine of CNC type is incomplete without SHC and safety kit, thus the CE directive is not fulfilled.
- We imperatively recommend you to follow the instructions given by our specialist staff.
- For optimum shipment we invoice a packaging flat rate of € 75.00.

Complete kit recirculating ball screws	Item No	**€ plus VAT**
Consisting of:		
• 3 x ball screw with spindle nut		
• Recirculating ball screws for all three axes		
without assembly	357 4456	**850.00**
With assembly	353 9225	**1'590.00**

Individual **recirculating ball screws**		
• with spindle nuts		
X axis Ø 20 mm	357 4321	**319.00**
Y axis Ø 20 mm	357 4322	**299.00**
Z axis Ø 25 mm	357 4323	**249.00**

Shop assembly recirculating ball screw	900 0524	**290.00**
· For each axis		

CNC-Add-on kit MK F46DP	357 0046	1´090.00

- Step motors with integrated terminal board
- Especially smooth running due to little self-resonance
- Protection class IP 54 enclosed motor
- Extended axle shaft
- 400 steps per rotation
- Toothed belt of HTD type (High Tork Drive) by Gates

Scope of delivery:

- Three step motors 12 Nm, three assembly housings incl. covers, six pulleys, three toothed belts, one bushing, one distance ring, two nuts, 15 meters screening cable, screw kit, mounting instructions

Shop assembly CNC-add-on kit MK F46DP	900 0605	350.00

- "Step motors" for all 3 axes

CNC - Controller IV "high power"	357 1953	1'490.00

- **included 3 control cards "high power"**
- Controller with 4 card slots
- 4 potential-free relay outputs
- External emergency-stop input
- Input for universal reference switch
- Connection 230 V ~50 Hz, 300 VA
- Dimensions L x W x H: 545 x 270 x 165 mm

Optional CNC control card "high power"	357 1962	295.00

one card per axis is required

Fig.: Controller IV "high power"

Fig.: Steuerkarte

„CNC-Controller IV "high power" on page 128

Housing SHC 3	353 9093	1'890.00

- Compact housing design
- Lateral part of the housings can be hinged, allowing easy access to the machine
- From three sides it is easily to view the working area through clear Macrolon panes
- Base is designed on two sides
- Deposit for laptop computers

„Housing SHC“ on page 140

"Safety kit"	353 9085	2'490.00

- Protects the user and the machine
- Fulfills the standard EN2006/42 EC with optimum housing SHC
- Including assembly
- Safety PLC
- Safety switch

CNC Basic software "NCdrive"	358 2110	300.00

- This is an executive program - no plotting program
- NC programs can be imported (from 2D or 3D programs) or can be directly entered to DIN 66025
- CD-Rom incl. NClyzer
- Power supply unit
- Connection cable RS 232
- NCdrive as external box

Fig.: NCdrive als externe Box

MegaNC 2010 - 2D CAD-program	358 2112	750.00

- In order to work with the machine, the "NCdrive" CNC basic software needs to be available

MegaNC 2010 - 3D CAD-program	358 2114	980.00

- In order to work with the machine, the "NCdrive" CNC basic software needs to be available

pcdreh® for Windows Basis-Version for Milling and turning	358 2025	380.00

- Hardware interface
- Power supply unit and all cables for serial connection
- CD-Rom

pcdreh® for Windows milling - Plus	358 2060	150.00

- Upgrade software of pcdreh® basic version

Additional functions:

- Axes can be referenced via a switch
- Manual or automatic changing of tools, incl. tool management
- Load and edit DIN-ISO files
- Four-axis processing

Fig.: Dongle

USB-Adapter RS232

- For PCs without RS232 connection

USB Adapter for **NC Drive**	357 1969	19.90
USB Adapter for **PC Dreh and Siemens**	357 1968	19.90

Universal reference switch kit	357 1980	129.00

- For CNC-Controller IV / CNC-Controller VI
- With universal add-on parts for up to three axes
- High repeat accuracy
- Contactless
- For assembling to the machine, machine zero point
- Protection class IP 65

Shop assembly reference switch kit	900 0506	99.00

CNC instruction	900 0510	500.00

- One-day instructions, complete cabeling and configuration of the control hardware, installation of the CNC software on a customer PC and short briefing in using hard- and software, instructions on-site
- Instruction on-site plus travel cost and overnight stay, if required

Complete and CNC add-on kit for drilling suitable for Opti D 240 x 500 G / D 280 x 700 G

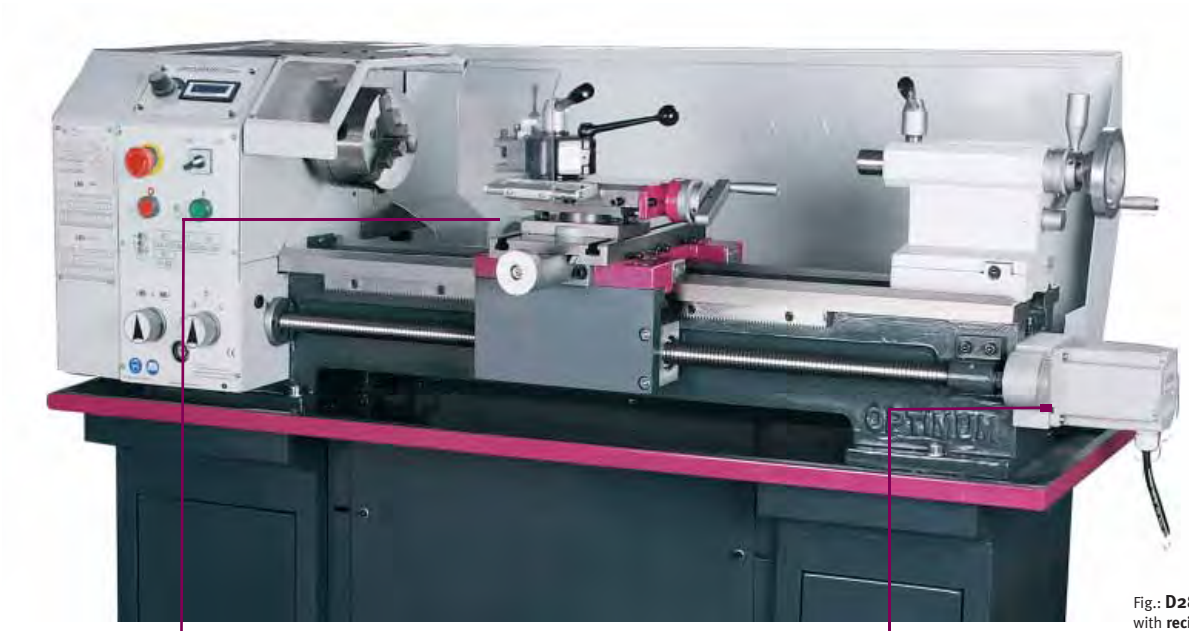


Fig.: **D280-CNC** with **recirculating ball screw**

2,2 Nm
Torque on the spindle
X axis
Travel speed*
max. **10** mm/sec.

6,4 Nm
Torque on the spindle
Z axis
Travel speed*
max. **12** mm/sec.

CNC complete kit for Opti D240 x 500 G Opti D280 x 700 G without ball screws	
Item No	353 9033
€ plus VAT	**1'550.00**

Consisting of:
• 1 x Controller VI
• 2 x Control cards 40 V
• 1 x Reference switch
• 1 x CNC - Add-on kit MK D24DP
Scope of delivery: Add-on kit MK D24DP
• Step motor bipolar X axis 2,2 Nm
• Step motor bipolar Z axis 4,2 Nm
• Two assembly housings incl. covers
• Two driving belts
• Four toothed pulleys
• One shaft extension
• Ein Wellendichtring
• 5 meters screening cable
• Screw kit
• Mounting instructions
• Including assembly (without software)

Important note:
- The indicated speeds demonstrate a nominal value, which had been determined by the current Opti D 280. These values may deviate upward or downward depending on the used software system and the operating method of the motor or the load of the motor.
- The indicated travels of the lathe D 280 can change when using ball screws.

CNC complete kit for Opti D280 x 700 G when using ball screws	
Item No	353 9031
€ plus VAT	**1'550.00**

Consisting of:
• 1 x Controller VI
• 2 x Control cards 40 V
• 1 x Reference switch
• 1 x CNC - Add-on kit MK D21DP
Scope of delivery: Add-on kit MK D21DP
• Step motor bipolar X axis 2,2 Nm
• Step motor bipolar Z axis 4,2 Nm
• Two assembly housings incl. covers
• Two driving belts
• Four toothed pulleys
• One shaft extension
• One rotary shaft seal
• 5 meters screening cable
• Screw kit
• Mounting instructions
• Including assembly (without software)

- The standard EN2006/42 EC is only fulfilled with the housing SHC, the electronic kit and assembly in shop by an authorised shop.
- The machine of CNC type is incomplete without SHC and safety kit, thus the CE directive is not fulfilled.
- We imperatively recommend you to follow the instructions given by our specialist staff.
- For optimum shipment we invoice a packaging flat rate of € 75.00.

CNC-Add-on kit MK D21DP	357 0210	**490.00**
• for D 280 x 700 when using ball screws		
CNC-Add-on kit MK D24DP	357 0240	**550.00**
• for D 240 x 500 G / D 280 x 700 G without ball screws		
• Step motors with integrated terminal board		
• Especially smooth running due to little self-resonance		
• Protection class IP 54 enclosed motor		
• Extended axle shaft		
• 400 steps per rotation		
• Toothed belt of HTD type (High Tork Drive) by Gates		

Scope of delivery:

- One step motor bipolar X-axis 2.2 Nm, One step motor bipolar X-axis 4.2 Nm, Two assembly housings incl. cover, Two drive belts, Four toothed pulleys, One shaft extension, one rotary shaft seal, 5 meters screening cable, screw kit, Mounting instructions

Shop assembly CNC-add-on kit	900 0500	**300.00**
• "Step motors" for all 3 axes		

CNC housing		
SHC 4 for CNC lathes D 240 x 500	353 9094	**1'190.00**
SHC 5 for CNC lathes D 280 x 700	353 9095	**1'290.00**

„Housing SHC“ on page 140

"Safety kit"	353 9085	**2'490.00**
· Protects the user and the machine		
· Fulfills the standard EN2006/42 EC with optimum housing SHC		
· Including assembly		
· Safety PLC		
· Safety switch		

CNC Encoder Satz	357 1963	**489.00**
• for the software PC Dreh		
• Aluminium flange to be installed in the gearbox		
• Toothed belt wheel for the encoder and for the main spindle		
• Toothed belt, screw kit		
• Protected according to IP54		
• Diameter of the shaft 8 mm		
• Light metal housing, black powder-coated		
• Principle: LED incl. glass slotted disc		
• Max. shaft load axial = 40 N, radial = 60 N		
• Max. Wellenbelastung axial = 40 N, radial = 60 N		

Universal reference switch kit turning	357 1966	**129.00**
• For Controller VI "high power"		
• Including connection for incremental encoder		
• With universal add-on parts for two axes		
• High repeat accuracy		
• Contactless		
• For assembling to the machine, machine zero point		
• Protection class IP 65		
Shop assembly reference switch kit	900 0506	**99.00**

CNC Basic software "NCdrive"	358 2110	**300.00**
• This is an executive program - no plotting program		
• NC programs can be imported (from 2D or 3D programs) or can be directly entered to DIN 66025		
• CD-Rom incl. NClyzer		
• Power supply unit		
• Connection cable RS 232		
• NCdrive as external box		

Fig.: NCdrive als externe Box

pcdreh® for Windows Basis-Version for Milling and turning	358 2025	**380.00**
• Hardware interface		
• Power supply unit and all cables for serial connection		
• CD-Rom		

pcdreh® for Windows Turning - Plus	358 2061	**150.00**
• **for Windows -** Upgrade software of pcdreh® basic version		
Additional functions:		
• Axes can be referenced via a switch		
• Manual or automatic changing of tools, tool management		
• Load and edit DIN-ISO files		
• Threading		

CNC - Controller III 40V	357 1951	**220.00**
• With 3 card slots - without control cards		
• Dimensions L x W x H: 295 x 230 x 145 mm		

CNC - Controller VI 40V	357 1950	**329.00**
• With 6 card slots - without control cards		
• Dimensions L x W x H: 540 x 275 x 125 mm		

CNC control card	357 1960	**125.00**
• X- Y- or Z-axis: one card each		
• one card per axis is required		

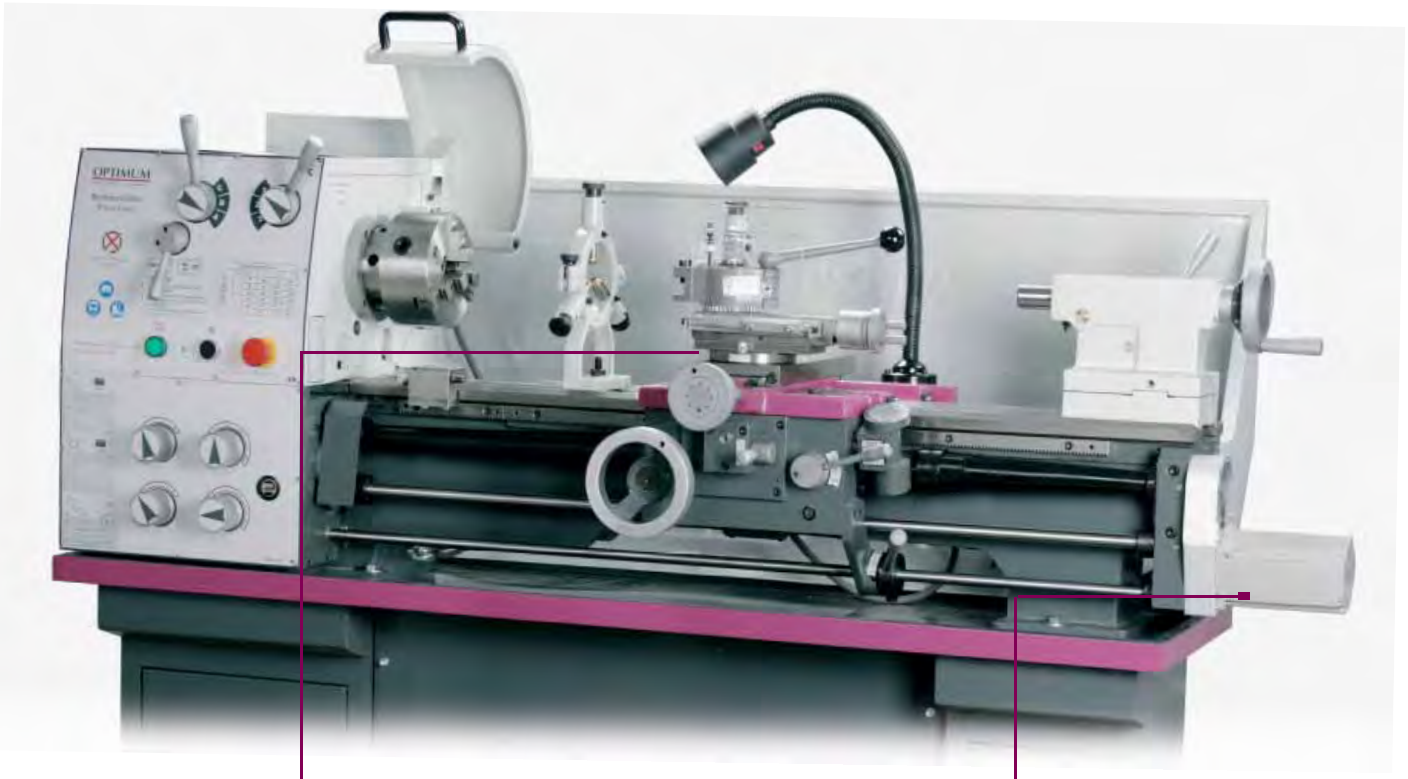
Recirculating ball screws for D 280 x 700		
for **X axis**	357 4421	**269.00**
for **Z axis**	357 4422	**289.00**
Mounting set	357 4425	**195.00**
• For both axes		
Shop assembly	900 0532	**249.00**
• For both axes		
Complete kit	353 9310	**1'090.00**
• 2 x recirculating ball screws		
• Assembly kit recirculating ball screw for all two axes		
• Including assembly		

Flexible Tastatur	357 1945	**18.00**
Water-, chip-, and dust-proof · Space-saving		
Wear-resistant · Easy cleaning Connection and power supply via PS/2		

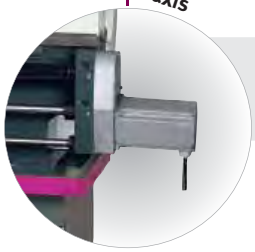
USB-Adapter RS232		
• For PCs without RS232 connection		
USB Adapter for **NC Drive**	357 1969	**19.90**
USB Adapter for **PC Dreh und Siemens**	357 1968	**19.90**

CNC instruction	900 0510	**500.00**
• One-day instructions, complete cabeling and configuration of the control hardware, installation of the CNC software on a customer PC and short briefing in using hard- and software, instructions on-site		
• Instruction on-site plus travel cost and overnight stay, if required		

Complete and CNC add-on kit for drilling suitable for Opti D 320 x 630 / Opti D 320 x 920



4,2 Nm
Torque on the spindle
X axis
Travel speed*
max. **12** mm/sec.



16,0 Nm
Torque on the spindle
Z axis
Travel speed*
max. **8** mm/sec.

CNC complete kit for Opti D320 x 630 / Opti D320 x 920	
Item No	353 9036
€ plus VAT	**2'490.00**

Consisting of:
• 1 x Controller IV “high power”
• 3 x Control cards “high power”
• 1 x Reference switch
• 1 x CNC - Add-on kit MK D32DP
Scope of delivery: Add-on kit MK D32DP
• Step motor bipolar X-axis 4.2 Nm
• Step motor bipolar Z-axis 8 Nm
• Two assembly housings incl. covers
• Two driving belts
• Four toothed pulleys
• One shaft extension
• One rotary shaft seal
• 5 meters screening cable
• Screw kit
• Mounting instructions
• Including assembly (without software)

*

- *Important note:
- The indicated speeds demonstrate a nominal value, which had been determined by the current Opti D 320. These values may deviate upward or downward depending on the used software system and the operating method of the motor or the load of the motor.
- The indicated travels of the lathe D 320 can change when using ball screws.
- The standard EN2006/42 EC is only fulfilled with the housing SHC, the electronic kit and assembly in shop by an authorised shop.
- The machine of CNC type is incomplete without SHC and safety kit, thus the CE directive is not fulfilled.
- We imperatively recommend you to follow the instructions given by our specialist staff.
- For optimum shipment we invoice a packaging flat rate of € 75.00.

CNC-Add-on kit MK D32DP	357 0285	650.00

- Step motors with integrated terminal board
- Especially smooth running due to little self-resonance
- Protection class IP 54 enclosed motor
- Extended axle shaft
- 400 steps per rotation
- Toothed belt of HTD type (High Tork Drive) by Gates

Scope of delivery:

- Step motor bipolar X-axis 4.2 Nm, Step motor bipolar Z-axis 8 Nm, Two assembly housings incl. covers, Two driving belts, Four toothed pulleys, One shaft extension, One rotary shaft seal, 5 meters screening cable, Screw kit, mounting instructions

Shop assembly CNC-Add-on kit	900 0632	300.00

- "Step motors" for all 3 axes

Housing SHC 7	353 9097	1'390.00

„Housing SHC“ on page 140

"Safety kit"	353 9085	2'490.00

- Protects the operator and the machine
- Fulfills the standard EN2006/42 EC with the optimum housing
- Including assembly
- Safety PLC · Safety switch

CNC encoder kit	357 1964	489.00

- for software PC Dreh
- Hardware for thread cutting
- Aluminium flange for installation in the apron, Encoder
- Toothed belt wheel for the encoder
- Toothed belt wheel for the main spindle
- Toothed belt
- Protected according to IP54
- Diameter of the shaft 8 mm
- Light metal housing, black powder-coated
- Principle: LED with glass slotted disc
- Max. shaft load axial = 40 N, radial = 60 N

Universal reference switch kit turning	357 1967	129.00

- For Controller IV "high power"
- Including connection for incremental encoder
- With universal add-on parts for up to three axes
- High repeat accuracy
- contactless
- For assembling to the machine, machine zero point
- Protection class IP 65

Shop assembly reference switch kit	900 0506	99.00

CNC Basic software "NCdrive"	358 2110	300.00

- This is an executive program - no plotting program
- NC programs can be imported (from 2D or 3D programs) or can be directly entered to DIN 66025
- CD-Rom incl. NClyzer
- Power supply unit
- Connection cable RS 232
- NCdrive as external box

Fig.: NCdrive als externe Box

pcdreh® for Windows BASIS-Version for Milling and turning	358 2025	380.00

- Hardware interface
- Power supply unit and all cables for serial connection
- CD-Rom

pcdreh® for Windows Turning - PLUS	358 2061	150.00

- **for Windows -** Upgrade software of pcdreh® BASIC version

Additional functions:

- Axes can be referenced via a switch
- Manual or automatic changing of tools, tool management
- Load and edit DIN-ISO files
- Threading

CNC - Controller IV "high power"	357 1953	1'490.00

- **included 3 control cards "high power"**
- Controller with 4 card slots
- 4 potential-free relay outputs
- External emergency-stop input
- Input for universal reference switch
- Connection 230 V ~50 Hz, 300 VA
- Dimensions L x W x H: 545 x 270 x 165 mm

Optional CNC control card "high power"	357 1962	295.00

one card per axis is required

Ball screw with nut		
for **X axis**	357 4427	299.00
for **Z axis** D 320 x 630	357 4428	389.00
for **Z axis** D 320 x 920	357 4429	399.00
Assembly kit	357 4430	195.00

- For both axis

Shop assembly	900 0530	590.00

- for each axis

Flexible keyboard	357 1945	18.00

- Water-, chip-, and dust-proof · Space-saving . Wear-resistant
- Easy cleaning . Connection and power supply via PS/2

USB-Adapter RS232		
USB Adapter for **NC Drive**	357 1969	19.90
USB Adapter for **PC Dreh und Siemens**	357 1968	19.90

- For Computer without RS232-connection

CNC instruction	900 0510	500.00

- One day instruction
- „CNC-instruction - Information“ on page 140
- Instruction on-site plus travel cost and overnight stay, if required

Easy-to-maintain housings SHC* for CNC milling machines and lathes

SHC 1 / SHC 2 / SHC 3

- Appropriate for Optimum CNC milling machines from BF 20 CNC to BF 46 CNC
- The design impresses since it is compact and easy-to-operate
- For SHC 1 and SHC 2 it is possible to take off the housing to the top
- For SHC 3 the base is designed on both sides
- For SHC 1 and SHC 2 the complete unit can be travelled
- Lateral parts of the housing can be folded, allowing easy access to the machine
- Add-on option for the deposit of a laptop computer
- The working area can be easily viewed from three sides due to the used clear Macrolon panes
- Base as cabinet for e.g. Controller or PC with cable duct
- Rear opening for cable duct

Housing SHC 1 for Opti BF 20 CNC-Vario	
Item No	353 9091
€ plus VAT	**890.00**
Dimensions L x W x H	1'295 x 1'000 x 1'770 mm
Net weight	200 kg

Housing SHC 2 for Opti BF 20 L CNC-Vario	
Item No	353 9092
€ plus VAT	**990.00**
Dimensions L x W x H	1'295 x 1'200 x 1'770 mm
Net weight	220 kg

Housing SHC 3 for Opti BF 30 CNC-Vario for Opti BF 46 CNC-Vario	
Item No	353 9093
€ plus VAT	**1'890.00**
Dimensions L x W x H	1'895 x 1.490 x 1'695 mm
Net weight	300 kg

Housing SHC 4 for Opti D240 x 500	
Item No	353 9094
€ plus VAT	**1'190.00**

Housing SHC 5 for Opti D280 x 700	
Item No	353 9095
€ plus VAT	**1'290.00**

Housing SHC 7 for Opti D320 x 630/920	
Item No	353 9097
€ plus VAT	**1'390.00**

*Important note:
- The standard EN2006/42 EC is only fulfilled with the housing SHC, the electronic kit and assembly in shop by an authorised shop.
- The machine of CNC type is incomplete without SHC and safety kit, thus the CE directive is not fulfilled.

Fig.: SHC 1/ SHC 2

Fig.: SHC 3

"Safety kit"	353 9085	**2'490.00**
· Protects the user and the machine		
· Fulfills the standard EN2006/42 EC with optimum housing SHC		
· Including assembly		
· Safety PLC		
· Safety switch		

CNC instruction - Information

CNC instruction in the house	
Item No	353 0510
€ plus VAT	**500.00**
Instruction on site	
· plus travel cost	
· accommodation cost	

When purchasing a CNC complete kit including Shop assembly, we recommend our customers to request instructions by one of our two company headquarters in Maintal/ Frankfurt or Hallstadt/Bamberg. In the frame of a one-day instruction on the machine, the customer receives the complete cabling and configuration of the control hardware, the installation of the CNC software to a PC which is provided by the customer and a short instruction regarding application of hardware and software.
For the optional shipment of the completely assembled, ready-to-connect CNC machine, a supplementary charge will be invoiced for the increased packaging cost, if applicable.

The step motor control Power-Drive 1 is a compact solution to control a separate machine axis operated by a step motor

- Control to drive a step motor with max. 3 A without CNC controller
- Step motor control is working in semi-step mode
- Integrated control card is protected against any type of short circuit
- Malfunctions will be displayed by a flashing red LED
- Infinitely variable feed speed
- Reference switch to monitor the stop position
- Right-/left-handed rotation
- Emergency-stop function
- Cooling element
- Application example as feed unit of the X-axis of a BF20 Vario

Power Drive 1	
Item No	357 1941
€ plus VAT	**229.00**
Used voltage/current	24 V 3.5A
Dimensions L x W x H:	115 x 128 x 62 mm

Scope of delivery
- Power supply unit
- Reference switch

CNC add-on kit MT F20X to control the X-axis of the drilling-milling machine OPTI BF20/ BF20 L

- Step motors with integrated terminal board
- Especially smooth running due to little self-resonance
- IP 54 enclosed motor protected against water and chips
- Extended axle shaft
- 400 steps per rotation
- Toothed belt of HTD type
- (High Tork Drive) by Gates

Application example as feed unit of the X-axis

CNC Add-on kit MK F20X	
Item No	357 0015
€ plus VAT	**199.00**

Scope of delivery
- Step motor 2.2 Nm, 3A (bipolar)
- Assembly housings incl. covers
- Driving belts
- Two toothed pulleys
- Spacers
- Assembly ring X-axis
- Screening cable
- Screw kit
- Mounting instructions

CNC Add-on kits MT RT1/MT RT2 to control the horizontal-vertical circular dividing tables

Add-on kit MK RT 1	
Item No	357 0510
€ plus VAT	**199.00**
• for horizontal-vertical circular dividing table RT100	
• for horizontal-vertical circular dividing table RT150	

Fig.: **RT150-CNC**

Add-on kit MK RT 2	
Item No	357 0514
€ plus VAT	**249.00**
• for horizontal-vertical circular dividing table RT200	

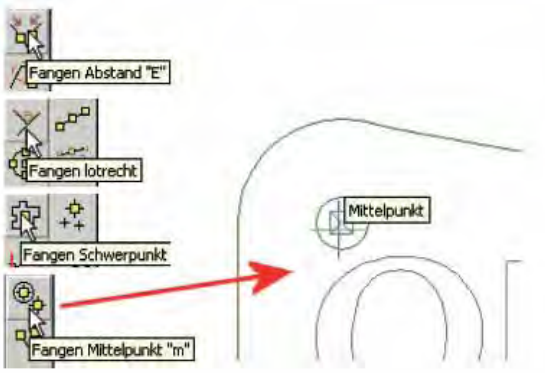
Scope of delivery:
- Housing
- Coupling
- Step motor 2.2 Nm, 3A
- Screws
- Cable 4 x 0.75 mm^2

MegaNC 2D/3D, the powerful CAD / CAM solution

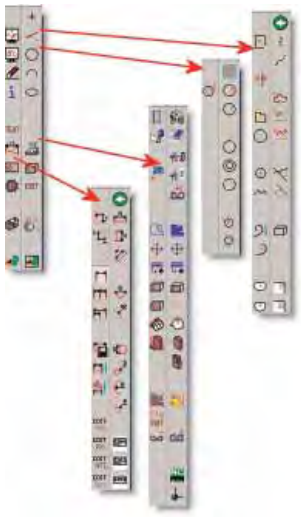
CNC basis software "NC Drive"	358 2110	**300.00**
Consisting of:		
• Including software NClyzer		
• Power supply unit		
• Connection cable RS 232		
• Adapter plug		
• NCdrive as external box		
2 D CAD-Programm Mega NC 2010	358 2112	**750.00**
• For this the CNC basic software NCdrive is required		
3 D CAD-Programm Mega NC 2010	358 2114	**980.00**
• For this the CNC basic software NCdrive is required		

MegaNC 2007 is the consequent solution for everyone who wants to use the CAD data directly for production. Powerful CAM functionality integrated into the common 2D/3D construction environment - guarantees a plus of operating comfort and performance.

The basis of MegaNC is the well-known, professional CAD system MegaCAD. The modern CAD system makes available comprehensive options for construction in 2D and 3D with easy operation.
AH functions for the draft, construction or 3D modeling are made available to the user in a practical way.

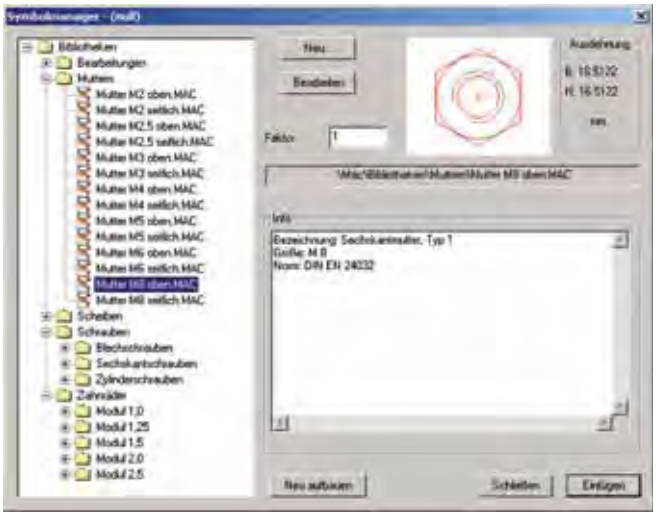


Powerful construction methods



Diversity of functions - the correct tool at any time

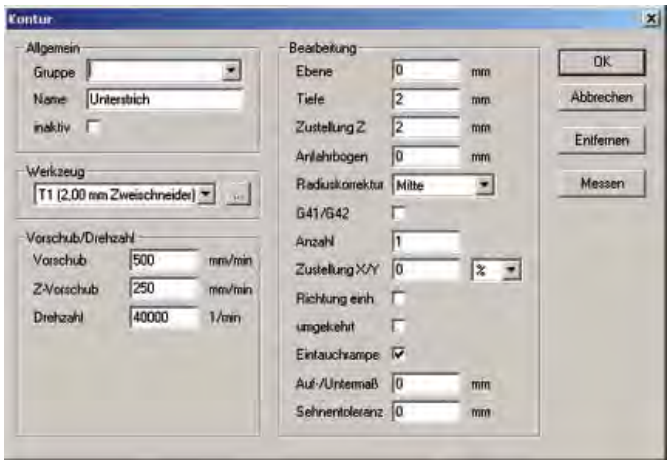
Of course, you can use the icon libraries with MegaNC or add your own constructions or details as components to the libraries.



Assemblies in the SymbolManager

After the construction of the component or after importing data (2D: .prt, dxf, .dwg; 3D: prt, .sat, .stl) the unmachined part definition will be performed with the CAD tools.

The CAD geometries are directly assigned to the milling strategies. This includes contours, pockets and holes as well as specific cycles in 2.5 D. In 3D you can rough and finish axially parallel and oriented to angles. Furthermore, there are strategies to machine surfaces and for Z-level finishing. In order to prevent the tools from damages, you can provide the milling tool paths with plunge ramps and approach cycles.



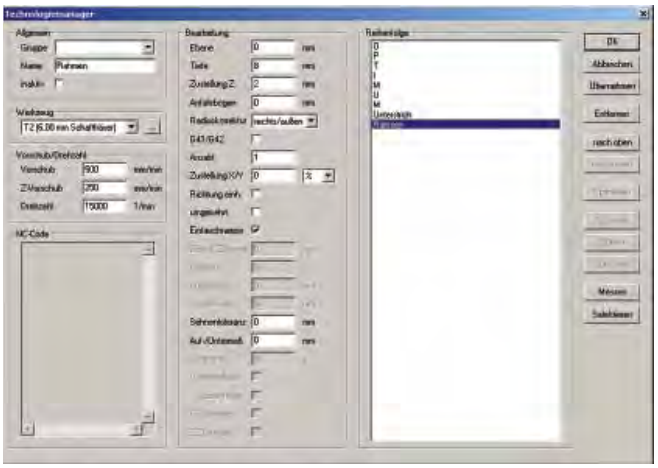
Assign from milling technology to contours

Please consider the tool path correction and where required the allowance for roughing for any operation.

The user can create a library for his tools and select them for the corresponding milling task.

Definition of tools in the library

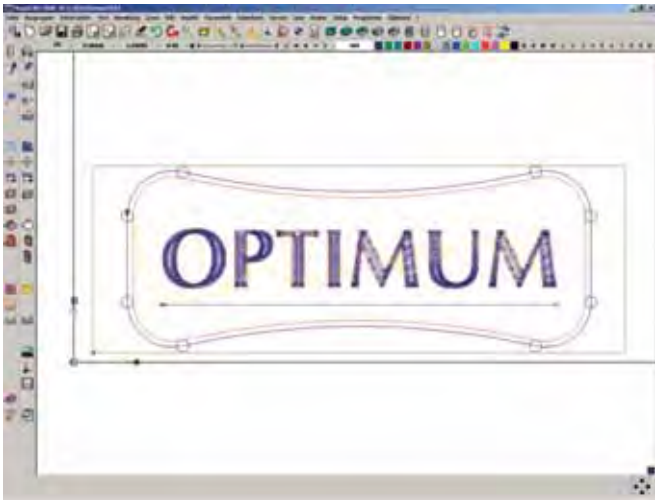
All defined operations will be shown in the technology manager. You also have the option to change parameters later on or to resort the order of the operations.



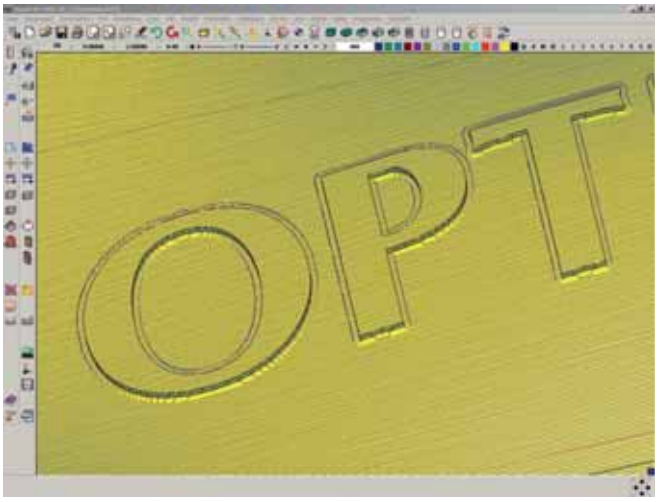
Technology manager for overview and change

Overview of the features of MegaNC

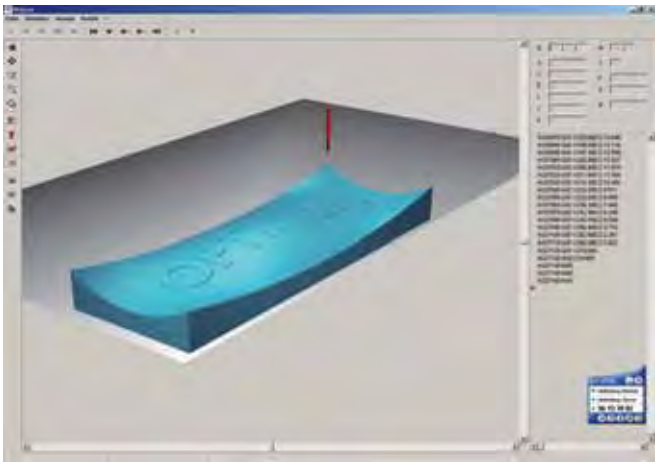
Professional 2D/3D construction
Interface for data import and export
Complete CAD/CAM integration
Changes of the geometry directly result in a new operation
Powerful milling strategies
Direct DNC operation with manual control NCdrive
Simulation and optimization



MegaNC - milling tool paths in 2.5 D



MegaNC - 3D construction and 3D finishing



NCdrive

The universal 4-axis step motor control

The NCdrive is a PC-based CNC control for step motors to output cycle and direction signals for up to 4 axes with unlimited preview of the tool path.

NCdrive represents a user interface for direct control of the machine (DNC). When using the complete solution for CAD/CAM, MegaNC-NCdrive the created NC code will be made available together with all parameters and setting for the operation on the machine.

Intension

NCdrive consequently uses the high performance of most modern hardware and of the Windows operating system. This way, a performance had been realized which can compete with the high end CNC controls of the upscale machine tools.

Just like those machines, the NCdrive NC codes (DIN 66025, others via optional preprocessors), supports manifold further NC commands and cycles and allows the operation in the setup and automatic operation (Fig. 1). In addition, the comprehensive functions for direct milling of contours and pockets are available as an innovative particularity - by simply entering parameters, it is not required to create NC codes for such functions (Fig. 2).

Fig 1: NCdrive in automatic operation

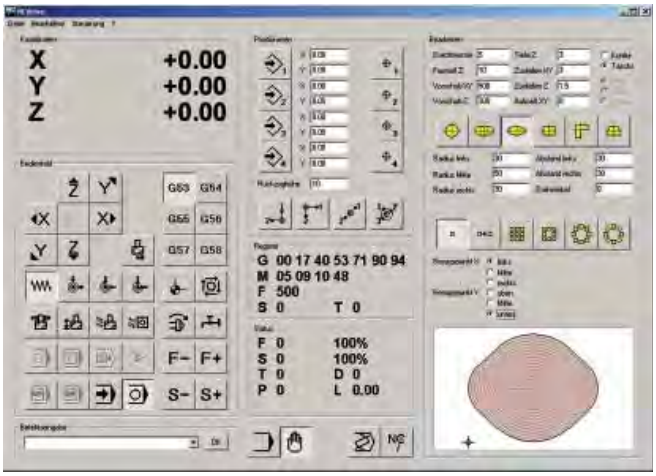


Fig 2: NCdrive cycles

Overview of NCdrive features

Milling & Turning
Windows user interface
4 axes simultaneously
Unlimited tool path preview
Tool radius correction
Tool change
Length measuring of tools
Helix interpolation
3D simulation
Operation cycles

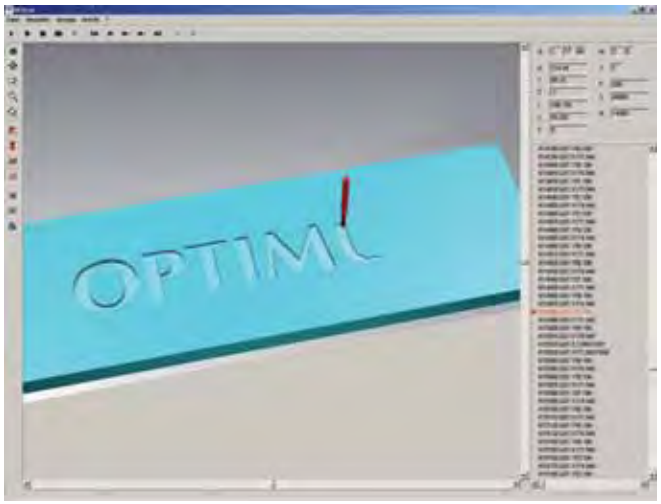
Configuration and settings

NCdrive allows comprehensive configurations of the machine functions. It concerns the definition of the presetting of parameters of the machine and of optional add-on devices (vacuum cleaner, tool changer, length measuring of tools,...). Of course, the CNC machine is factory-made operatively pre-configured. In this way, the user has the option to adapt and optimize or to add it to the "machining center".

Fig 3: NCdrive configuration

Safety

Before the first chip is flying off, the milling operation can be controlled in the graphic simulation NClyzer light. In this way, the user will get the safety he needs to work in a relaxed way.



Hardware

The NCdrive uses the PC processor for the user interface and for all computation-intensive operations. The highly dynamic control of the NC drive motors in real time is assumed by a special controller which is delivered together with the software.
The connection is performed via a serial interface or a USB adapter. In this way also a milling machine with step motor can achieve the dynamics and smoothness of a machine with servo drive.

Options

Due to the modular structure of the NC drive software there are different options for the operation of the existing machines available. It ranges from comprehensive manual operation with integrated operation macros and DIN code import and interpretation up to the complete 2D/3D CAD/CAM Suite.

Due to the integration of potentially separated relay inputs and outputs, it is also possible to switch additional equipment.

The manual control for the direct DNC operation of the machine is also part of the CAD/CAM tool MegaNC, which is being extended by another powerful interface for direct machine control.

NCdrive as external box

System requirements

- Operating systems: Windows 2000/Windows XP Home/Professionell
- Minimum requirements: Pentium III from 500 MHz / 256 MB RAM on Windows NT 4.0
- Recommended equipment:

  AMD Athlon / Pentium III from 1 GHz on / 512 MB RAM

pcdreh® for Windows Chipping range: milling and turning

pcdreh for Windows milling and turning BASIS	358 2025	380.00
• Hardware interface		
• Power supply unit and all cables for serial connection		
• CD-Rom		

pcdreh® for Windows milling - PLUS	358 2060	150.00
• Upgrade software for pcdreh® Basis-Version		
Additional functions:		
• Axes can be referenced via a switch		
• Tool change, incl. tool management		
• Load and edit DIN-ISO files		
• Four-axis processing		

pcdreh® for Windows turning - PLUS	358 2061	150.00
• Upgrade software for pcdreh® Basis-Version		
Additional functions:		
• Axes can be referenced via a switch		
• Tool change, incl. tool management		
• Load and edit DIN-ISO files		
• Threading (only with optional decoder)		

A turning-milling machine control cast from the same mould, CAD-CAM control in symbiosis, easy operation which does not require any PC abilities of the user.
Drawing, naming the operation, simulating and there you go. Without any detours, without any additions.

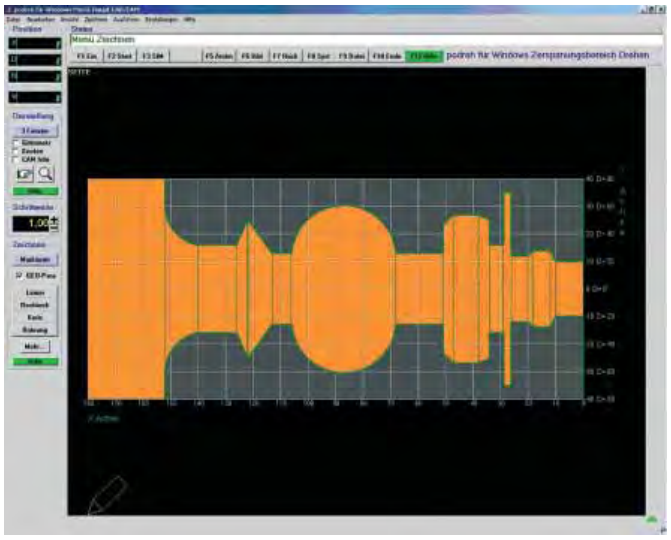
Rookies will rapidly be successful thanks to the shop-oriented programming of graphic support and extensive dialog guiding.

By the last mouse click of the drawn contour, the CAM data window directly appears to take over diameter, cutting depth and infeed. Then your project is ready, after the successful simulation you can start the machining. pcdreh® is not a kind of software in the common sense. Everything is combined in the drawing.

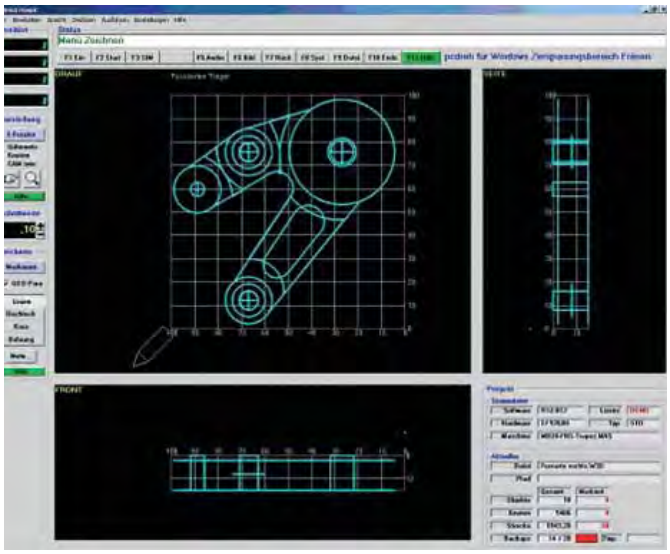
Already available data can be imported in the following format: HPGL, Bitmap and DIN-ISO code (only for PLUS version).

Lots of ideas of our customers had been integrated in this software. In this context we would like to thank you very much for your constructive companionship.

Screen presentation of turning:



Screen presentation of milling:



CAD:

The main part of the program is drawing by using the mouse. I.e. a geometry is "fitted" using the mouse; then the new GEO parameter window allows you to modify or confirm its dimension and position.

It is possible to edit parts of a drawing off the reel, e.g.: rotating, scaling or shifting.

The keyboard operation is completely integrated.

Artificial lines in contrasting colours also support the design as the snapping of grids, nodes or centers or as well the automatic duplicating of holes or whole components.

The shop drawing takes place on the screen and may be started immediately without any detours. Pencil, paper, scribing iron and center punch stay in the drawer. The flange, the driving rod, the cylinder cover or crank arm are directly manufactured. Two or four identical parts are really identical, they fit when flapping and exchanging.

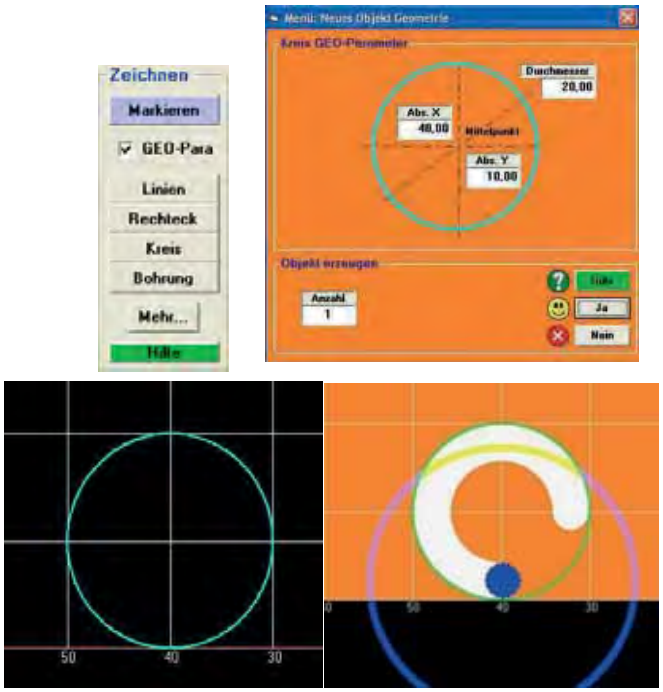


Fig.: Geometry

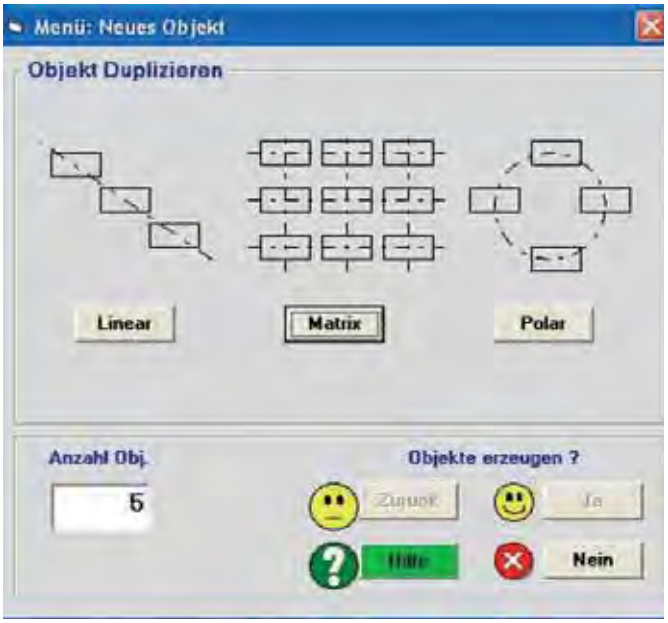


Fig.: Duplicating

Function "Load bitmap"

Lay a drawing, a photo or a construction plan on the scanner and import it as drawing template. Irregular contours or contours which are not rightly dimensioned by NC can this way easily be redrawn, i.e. digitalized "manually". It is possible to directly upload pictures from digital cameras.

The "teach-in" procedure is another option of digitalization which takes place with the help of a machine.

In both ways of digitalization the vertices are entered manually on which the drawing then will be developed.

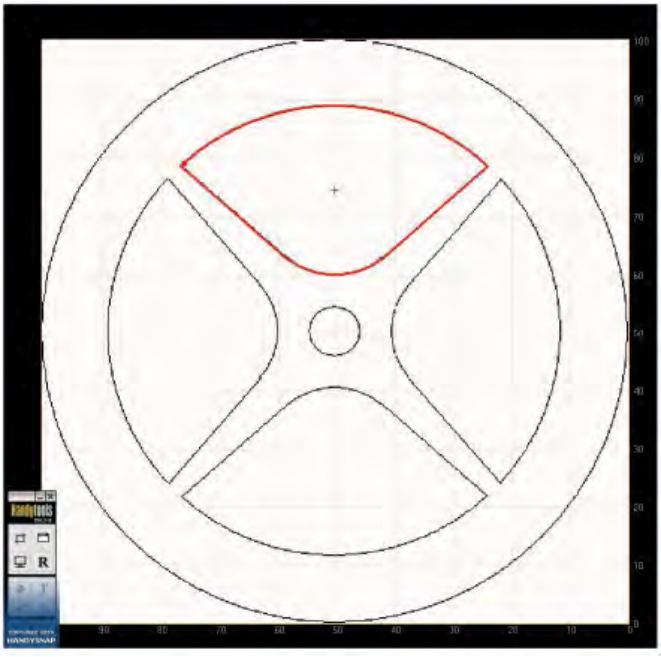


Fig.: Circle

CAM:

Using pcdreh® for Windows all options for demanding chipping tasks will be available to you. Starting from easy tasks, such as drilling or groove cutting over rectangle and circular pocketing up to clearing pockets with detection of island or four-axes milling.

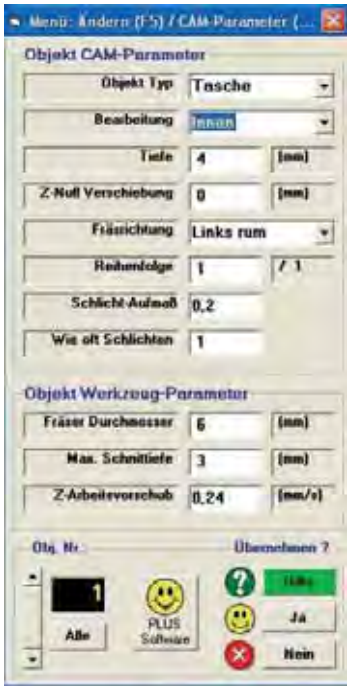


Fig.: CAM milling

For drilling all operation directions as well as strategies of any combination are available to you, e.g., machining the outside, inside or plane side with easy cuts or in several steps (automatically calculated by the program). Simple or multiple finishing is obligatory.

When you start the output all ways of chipping are precalculated and displayed on the screen in three views/windows. In this way, you will have a direct control. You can see if everything will run as required, even in the depth.

In the Plus versions of turning and milling a complete tool management as well as tool change are available to you.

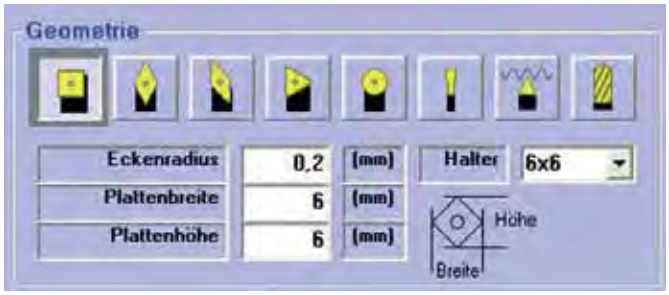


Fig.: Turning geometry

Machines and controls:

The basic settings (spindle pitch, gear reduction, etc.) are available for all optimum machines as selectable files. A machine image will help you to manage several settings. Then the comparison of the machine is only limited to entering the spindle clearance.

In order to obtain real time capability of the Windows PC we use a control PC in the dongle housing which generates the impulses for the electronics of the step motors. Here a very rapid microprocessor is used which has the advantage that the machine can run much smoother and more dynamic for line, circle and helix interpolations. The control is performed serially, alternatively via USB.

Example: crankshaft

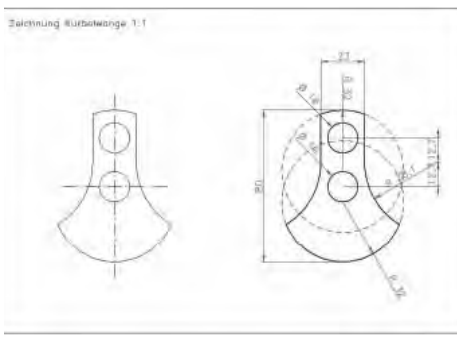


Fig.: Drawing crank web

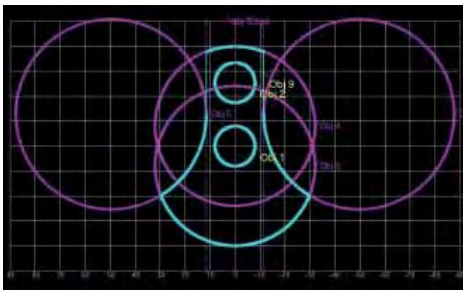


Fig.: Construction crank web

Example: Finished milled crankweb

The help system

1) Clever by integrated HTML pages:
The pages of the manual are created based on HTML. In this way, they are linked to one another. Each window disposes of its proper help page, the green key. Thus it is possible to directly access help, if required. It is possible to print such pages completely or individually. This system is continuously enhanced and completed.

2) Status row:
Informs you about the operation progress and requires entries from the user (dialog guiding).

3) Tooltip texts for each input field or operating key
Each operating area includes a description (tooltip), if you leave the cursor on it for a short while.

4) 100% clear text
All operating keys are labeled in a clear way without abbreviations.

5) Information fields
Certain important information are directly available in the windows.

System requirements

Operating system: All Windows operating systems starting from WIN98 incl. Vista. Windows 3.11 and WIN95 are not supported.
Processor:
Minimum: PENTIUM I 133 MHz
Normal: PENTIUM II 500 MHz
Optimum: PENTIUM III 800 MHz.
More rapid processors offer an even more rapid screen build-up, but no further important advantages.
Interfaces:
Minimum: A serial interface (or via USB 1.0 / 2.0 using a separate adapter).
Optimum: A second interface for measuring tasks, electronic handwheel or speed control.
Main memory:
Minimum: 16MB
Optimum: 128 MB.
A larger memory would be reasonable for this proportionally large drawings or 3D CNC programs.
Hard disk:
Minimum: 40 MB, Optimum: 120 MB
Resolution of screen:
Minimum: 1024 x 768 pixels, Optimum: 1600 x 1200 pixels
Others: Keyboard and mouse

Versions

The demands and requirements of our customers are quite differing, therefore the offer for pcdreh® for Windows is clearly structured:

- **Pcdreh for Windows chipping range milling**
- **Pcdreh for Windows chipping range turning**

Both versions are available as Basic or PLUS version.

The standard programs offer everything to control a two- or three-axis machine tool.

The PLUS versions are available for extended demands:
- Axes can be referenced via a switch
- Tool change, incl. tool management
- Load and edit DIN-ISO files
- Four-axis machining when milling
- Threading when turning (with optional decoder)

Example:
Finished turned crankshaft

Example: Cylinder

Example: Turned and milled turbine

Stable CNC milling machine with professional Siemens control, perfect for small series and training purposes

- Ball screw made by HIWIN in all three axes
- Robust and precise dovetail control adjustable without clearance with V-ledges
- Bellow as guide protection
- Electronic controllable drive
- Compact housing design
- Slewable display
- An electronic handwheel reduces the setting time to a minimum
- The working area can be easily viewed from three sides through clear-resistant Makrolon panes
- Base designed on two sides. Front side with access to the coolant tank; rear side with access to the electronic system and to the Optimum CNC Controller III
- Integrated safety switch
- 2 gear stages (L/H)
- Central lubricating
- Signal lamp
- Gear stage is presented with the gear change on the Siemens control
- Front doors with safety switch

Siemens 802S base line

Most modern milling technology using Siemens CNC control

- High efficiency and flexibility
- Easy-to-operate and simple programming
- Easy data managment

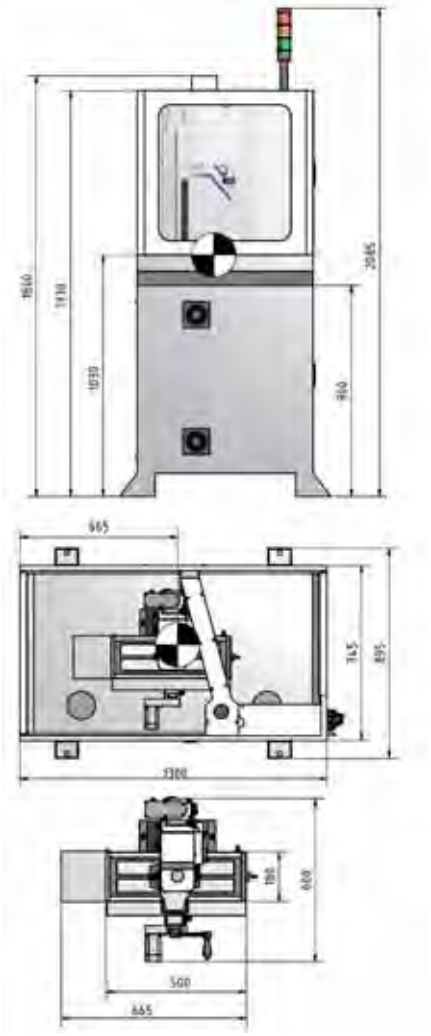
„Sinumerik 802 S base line“ on page 176

Model	M2 CNC
Item No	350 0120
€ plus VAT	**11'500.00**

Features	
Electrical connection	
Motor	850 W 230 V ~50 Hz
Coolant pump	40 W
Spindle seat	
Spindle seat	MT 2/M 10
Milling head capacity max.	Ø 52 mm
End mill capacity max.	Ø 16 mm
Throat	185 mm
Drill-mill head	
Gear stages	2 Steps, speed adjustable
Travel Z axis	280 mm
Feed speed Z axis	2'000 mm/min.
Speeds	
Gear stage low	90 - 1'480 rpm
Gear stage fast	150 - 3'000 rpm
Cross table	
Table length x width	500 x 180 mm
Travel Y axis	155 mm
Feed speed Y axis	2'000 mm/min.
Travel X axis	280 mm
Feed speed X axis	2'000 mm/min.
T-slot size / number / distance	12 mm / 3 / 63 mm
Load of cross table (max.)	55 kg
Dimensions	
Length x Width x Height	1'300 x 745 x 1'760 mm
Total weight	340 kg
Scope of delivery	
Taper mandrel MT 2, B16 M10 Draw-in rod M 10 Operating tool	

We imperatively recommend you to follow the instructions given by our specialist staff.

Dimensions



New
in the product range

- Control of the axle drives

- Coolant tank integrated in the base
- Tank capacity 15 litres

- An electronic handwheel reduces the setting time to a minimum
- Emergency-stop push-button
- Acknowledgement button

- Two-step
- For powerful transmissi-on of the motor power

Stable CNC milling machine with professional Siemens control, perfect to be used in the mould making

- Ball screw made by HIWIN in all three axes
- Solid, precise cross table, largely dimensioned and precisely machined surface
- Heavy, solid cast iron construction
- Adjustable v-ledges
- Very wide speed range from 150 - 8'600 rpm
- Infinitely variable drive
- Signal lamp
- An electronic handwheel reduces the setting time to a minimum
- Compact housing design
- Lateral parts of the housing are foldable, thus easy access to the machine
- The working area can be easily viewed from three sides through clear-resistant Makrolon panes
- Base designed on two sides. Front side with access to the coolant tank; rear side with access to the electronic system and to the Optimum CNC-Controller IV
- Siemens Micromaster as frequency converter
- Front doors are equipped with a safety switch
- Central lubricating

Siemens 802S base line

Most modern milling technology using Siemens CNC control

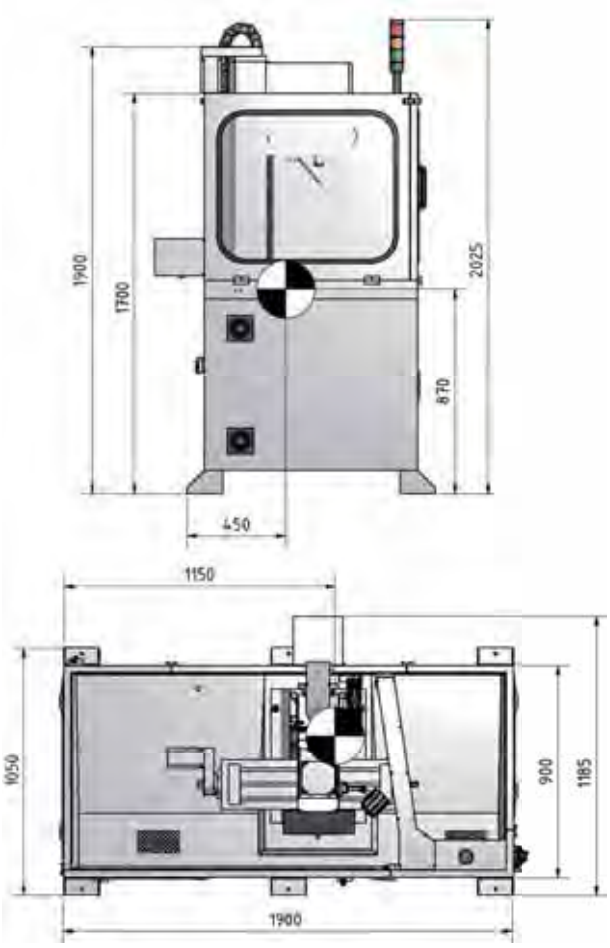
- High efficiency and flexibility
- Easy-to-operate and simple programming
- Easy data managment

„Sinumerik 802 S base line“ on page 176

Model	M3HS CNC
Item No	350 0130
€ plus VAT	**16'500.00**

Features	
Electrical connection	
Motor	3 kW 400 V ~50 Hz
Main spindle torque	4.7 Nm
Coolant pump	40 W
Spindle seat	
Spindle seat	ER 32
Drilling capacity in steel (St. 37)	Ø 13 mm
Continuous drilling capacity steel (St.37)	Ø 11 mm
End mill capacity max.	Ø 20 mm
Throat	220 mm
Drill-mill head	
Travel Z axis	460 mm
Feed speed Z axis *	2'000 mm/min.
Speeds	150 - 8'600 rpm
Cross table	
Table length x width	750 x 210 mm
Travel Y axis	450 mm
Feed speed Y axis*	2'000 mm/min.
Travel X axis	200 mm
Feed speed X axis*	2'000 mm/min.
Distance spindle - cross table	470 mm
T-slot size / number / distance	12 mm / 3 / 63 mm
Dimensions	
Length x Width x Height	1'900 x 1'160 x 1'900 mm
Total weight	760 kg
Scope of delivery	Operating tool

Dimensions



* The indicated feed speeds are determined in the 1/16 step procedure

We imperatively recommend you to follow the instructions given by our specialist staff.

New
in the product range

- Signal lamp

- An electronic handwheel reduces the setting time to a minimum
- Emergency-stop push-button
- Acknowledgement button

- Coolant tank integrated in the base
- Tank capacity 15 litres

- High power
- Powerful micro processor control
- Control of the axle drives
- Micro step setting is possible

- Cable duct in an energy chain

Stable CNC milling machines with professional Siemens control, perfect to be used in the mould making

- Ball screw made by HIWIN in all three axes
- Solid, precise cross table, largely dimensioned and precisely machined surface
- Heavy, solid cast iron construction
- Adjustable V-ledges
- Very large speed range (M4HS CNC)
- Infinitely variable drive
- An electronic handwheel reduces the setting time to a minimum
- Compact housing design
- Lateral parts of the housing are foldable, allowing easy access to the machine
- The working area can be easily viewed from three sides through clear Makrolon panes
- Base designed on two sides. Front side with access to the coolant tank; rear side with access to the electronic system and to the Optimum CNC Controller IV
- Siemens Micromaster as frequency converter
- Front doors are equipped with a safety switch
- ER32: for high speed and normal chipping
- SK 40: to work with drills or cutter heads
- Easy tool replacement by means of pneumatic system for SK 40
- Central lubricating
- Linear guiding in the Z-axis (M4 CNC)

Siemens 802S base line

Most modern milling technology using Siemens CNC control

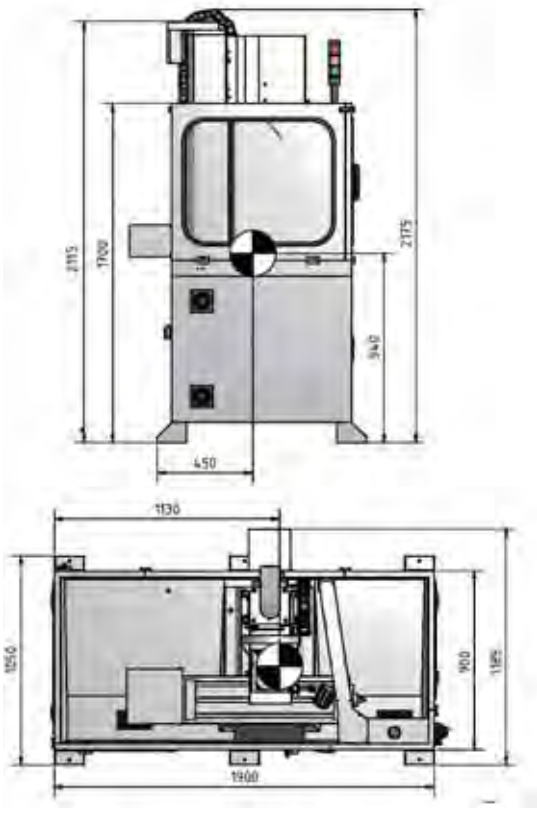
- High efficiency and flexibility
- Easy-to-operate and simple programming
- Easy data managment

„Sinumerik 802 S base line“ on page 176

Model	M4 CNC	M4HS CNC
Item No	350 0142	350 0140
€ plus VAT	**18'500.00**	**17'900.00**

Features		
Electrical connection		
Motor	2,2 kW / 230 V ~50 Hz	3 kW/400 V ~50 Hz
Main spindle torque	three gear stages 50 Nm / 21 Nm / 9 Nm	directly driven 4.7 Nm
Coolant pump	40 W	
Spindle seat		
Spindle seat	SK40	ER 32
Bohrleistung in Stahl (St.37)	Ø 30 mm	Ø 13 mm
Dauerbohrleistung in Stahl (St.37)	Ø 21 mm	Ø 11 mm
Milling head capacity max.	Ø 63 mm	-
End mill capacity max.	Ø 32 mm	Ø 20 mm
Throat	260 mm	
Anzugsstange	M16	-
Bohr Fräskopf		
Travel Z axis	530 mm	
Feed speed Z axis *	1'500 mm/min.	2'000 mm/min.
Speeds	115 - 3'100 rpm	150 - 8'600 rpm
Cross table		
Table length x width	750 x 210 mm	
Travel Y axis	500 mm	
Feed speed Y axis*	2'000 mm/min.	
Travel X axis	240 mm	
Feed speed X axis*	2'000 mm/min.	
T-slot size / number / distance	18 mm / 3 / 80 mm	
Dimensions		
Length x Width x Height	1'900 x 1'160 x 1'900 mm	
Total weight	780 kg	800 kg
Scope of delivery	Bedienwerkzeug	

Dimensions



We imperatively recommend you to follow the instructions given by our specialist staff.

* The indicated feed speeds are determined in the 1/16 step procedure

New
in the product range

- Signal lamp

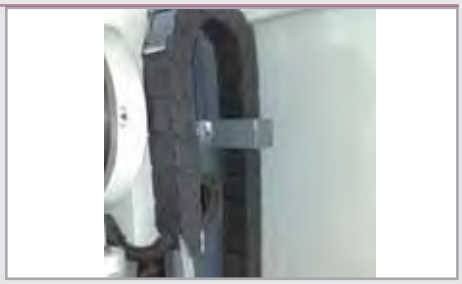
Fig.: **M 4 HS CNC** with optional vibration absorber **SE**

- Powerful micro processor control
- Control of the axle drives
- Micro step setting is possible

- Coolant tank
- Tank capacity 20 litres
- Oil pump

- Micromaster made by Siemens is the universal converter
- Integrated protection/overload functions

- Cable duct in an energy chain



CNC milling machine perfect for individual part production and for small series production in small enterprises using the complete CNC control package made by Siemens

- Heavy type
- High-performance drive motor 4 kW with infinitely variable electronic speed control (frequency converter) made by Siemens
- 3 step motors made by Siemens for the separate drive of the X-, Y- and Z- axis
- All axis have recirculating ball screws with central lubrication
- Air feed for tool clamping
- All guideways with special steel covers
- Automatic lubrication of the guideways
- Built-in machine lamp/coolant equipment
- Tool change by the push of a button (electro-pneumatic tool clamping device)
- An electronic handwheel reduces the setting time to a minimum
- Limit stop and reference switch of contactless type
- Powerful motors for heavy chipping
- Compact type
- Ground ball screws in all axes
- Easy tool change due to pneumatic system
- Coolant tank easily accessible from outside, easy to clean
- 1-year Siemens warrantee

Model	**F 100 CNC**
Item No	350 1103
€ plus VAT	**25'900.00**

Features	
Electrical connection	
Motor	5.8 kW 400 V ~50 Hz
Coolant pump	200 W
Spindle seat	
Spindle seat	BT40
Milling head capacity max.	Ø 63 mm
End mill capacity max.	Ø 20 mm
Throat	410 mm
Milling accuracy	
Repeating accuracy	0.007 mm
Positioning accuracy	0.009 mm
Drill-mill head	
Travel Z axis	400 mm
Feed speed Z axis	1'500 mm/min.
Feed drive/Torque Z axis	12 Nm
Distance spindle - table	110 - 510 mm
Driving motor	4 kW
Torque motor driving motor	26 Nm
Speeds	100 - 8'000 rpm
Cross table	
Table length x width	960 x 280 mm
Travel Y axis	300 mm
Feed speed Y axis*	3'000 mm/min.
Feed drive/Torque Y axis	9 Nm
Travel X axis	450 mm
Feed speed X axis*	3'000 mm/min.
Feed drive/Torque X axis	9 Nm
T-slot size / number / distance	14 mm/85 mm/3
Load of cross table (max.)	300 kg
Dimensions	
Length x Width x Height	1'965 x 1'650 x 2'300 mm
Tank capacity coolant	50 litres
Total weight	1'100 kg
Scope of delivery	Seat of milling cutter BT 40/ER 32 7 collet (3 -12 mm) Connection cable RS 232

We imperatively recommend you to follow the instructions given by our specialist staff.

Siemens 802S base line

Most modern milling technology using Siemens CNC control

- High efficiency and flexibility
- Easy-to-operate and simple programming
- Easy data managment

„Sinumerik 802 S base line“ on page 176

Siemens warranty period (control)	900 1012	**450.00**
• Is increased from 12 month to 24 months		
• only if a machine is ordered		

Fig.: **F 100 CNC**
with optional accessories

- Solid, precise cross table, largely dimensioned and precisely machined surface
- With T-slots (size 14 mm)

- Pneumatic tool clamping
- device for simple tool change
- Built-in bright machine lamp
- All paths are equipped with mobile stainless steel covers

- Siemens drives
- Limit stop and reference switch of contactless type

- Mobile coolant tank
- High-performance pump
- Tank capacity 50 litres
- Coolant level glass

CNC milling machine with tool changer and complete CNC control package made by Siemens

- Heavy type
- Compact type
- Main spindle drive due to high-performance servo motor by Siemens (12 kW)
- 3 step motors made by Siemens for the drive of the X-, Y- and Z- axis
- All guideways with special steel covers
- Automatic central lubrication of the machine
- All main axes are equipped with ground ball screws
- Built-in machine lamp/coolant equipment
- Automatic tool changing system with 10 tool places
- Tool change is performed automatically or by pushing a button (electro-pneumatic tool clamping device)
- An electronic handwheel reduces the setting time to a minimum
- Limit stop and reference switch of contactless type
- Spindle overload protection, incl. display
- Solid, precise cross table, largely dimensioned and precisely machined surface
- T-slot nut (size 14 mm)
- Coolant tank easily accessible from outside, easy to clean
- Machine is prepared for the mounting of an OMP40 test key system made by the company Renishaw
- Including 1-year Siemens warrantee

Model	F 100 TC-CNC
Item No	350 1113
€ plus VAT	**43'900.00**

Features	
Electrical connection	
Motor	17 kW 400 V ~50 Hz
Coolant pump	200 W
Spindle seat	
Spindle seat	7:24 BT40
Milling head capacity max.	Ø 63 mm
End mill capacity max.	Ø 20 mm
Milling feed	1 - 5'000 mm/min.
Throat	410 mm
Fast motion	10'000 mm/min.
Milling accuracy	
Repeating accuracy	0.007 mm
Positioning accuracy	0.009 mm
Drill-mill head	
Travel Z axis	400 mm
Feed drive/Torque Z axis	11 Nm
Distance spindle - table	110 - 510 mm
Driving motor	12 kW (S1-mode; 9 kW)
Torque driving motor	57 Nm
Speeds	100 - 8'000 rpm
Tool changer	
Disc type	10 tools
Time - tool changing	7 - 12 seconds
Cross table	
Table length x width	960 x 280 mm
Travel Y axis	300 mm
Feed drive/Torque Y axis	6 Nm
Travel X axis	450 mm
Feed drive/Torque X axis	6 Nm
T-slot size / number / distance	14 mm/85 mm/3
Load of cross table (max.)	300 kg
Dimensions	
Length x Width x Height	1'965 x 1'650 x 2'300 mm
Tank capacity coolant	50 litres
Total weight	1.700 kg
Scope of delivery	Seat of milling cutter BT 40/ER 32 7 collets (3 -12 mm) Connection cable RS 232

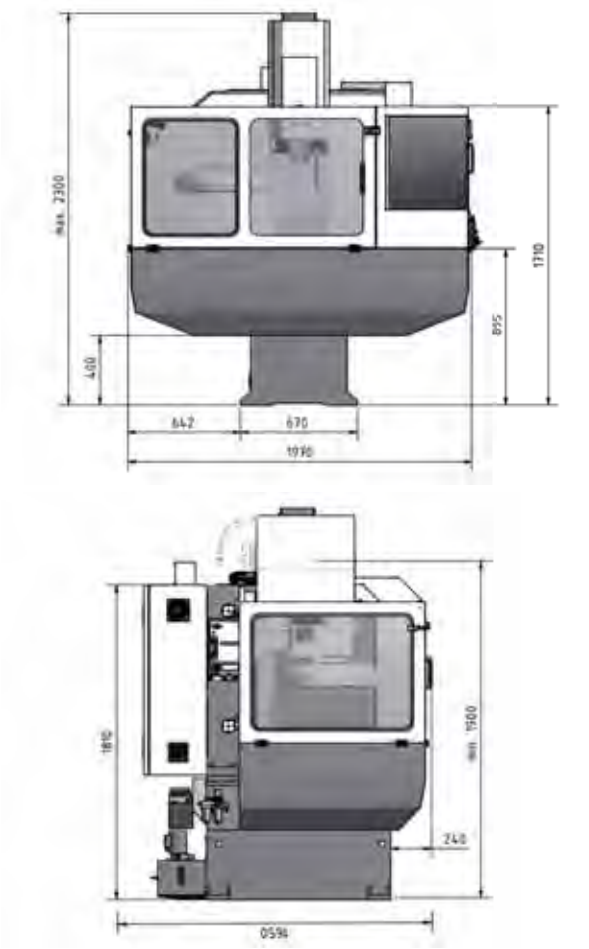
We imperatively recommend you to follow the instructions given by our specialist staff.

Siemens 802D SL Pro

CNC control made by Siemens

- Easy data managment
- Functional and easy-to-operate control
- Easy-to-operate and simple programming

Dimensions



Siemens warranty period (control)	900 1012	450,00

- Is increased from 12 month to 24 months
- only if a machine is ordered

Fig.: **F 100 TC- CNC**

- Automatic tool change system by means of magazine disc for 10 tools
- Tool change speed from 7 to 12 sec.
- Tool diameter max. 63 mm
- Tool length max. 300 mm

CNC milling machine with tool changer perfect for individual part manufacturing and /or small series production in small enterprises with complete CNC control package made by Siemens 828 D equipped with Sinumerik Operate

- Heavy type
- Compact type
- Main spindle drive due to high-performance servo motor by Siemens (12 kW)
- 3 step motors made by Siemens for the drive of the X-, Y- and Z- axis
- All guideways with special steel covers
- Automatic central lubrication of the machine
- All main axes equipped with ground ball screws
- Built-in machine lamp/coolant equipment
- Automatic tool changing system with 10 tool places
- Tool change is performed automatically or by pushing a button (electro-pneumatic tool clamping device)
- An electronic handwheel reduces the setting time to a minimum
- Limit stop and reference switch of contactless type
- Spindle overload protection, incl. display
- Solid, precise cross table, largely dimensioned and precisely machined surface
- T-slot nut (size 14 mm)
- Coolant tank easily accessible from the outside, easy to clean
- Including 2-year Siemens warrantee

Model	F 110 TC-CNC
Item No	351 1110
€ plus VAT	**48'900.00**

Features	
Electrical connection	
Gesamtanschlussleistung	18 kW 400 V ~50 Hz
Coolant pump	200 W
Spindle seat	
Spindle seat	7:24 BT40
Milling head capacity max.	Ø 63 mm
End mill capacity max.	Ø 32 mm
Milling feed	10'000 mm/min.
Throat	410 mm
Fast motion	10'000 mm/min.
Milling accuracy	
Repeating accuracy	0.007 mm
Positioning accuracy	0.009 mm
Drill-mill head	
Travel Z axis	400 mm
Feed drive/Torque Z axis	11 Nm
Distance spindle - table	110 - 510 mm
Driving motor	12 kW (S1-mode; 9 kW)
Torque driving motor	57 Nm
Tool changer	
Disc type	10 tools
Time - tool changing	7 - 12 seconds
Speeds	100 - 10'000 rpm
Cross table	
Table length x width	960 x 280 mm
Travel Y axis	300 mm
Feed drive/Torque Y axis	11 Nm
Travel X axis	450 mm
Feed drive/Torque X axis	6 Nm
T-slot size / number / distance	14 mm/85 mm/3
Load of cross table (max.)	300 kg
Dimensions	
Length x Width x Height	1'965 x 1'650 x 2'300 mm
Tank capacity coolant	50 litres
Total weight	1'700 kg
Scope of delivery	Machine feet 4 pcs. Collets kit ER 32 incl. 6 pcs collets

We imperatively recommend you to follow the instructions given by our specialist staff.

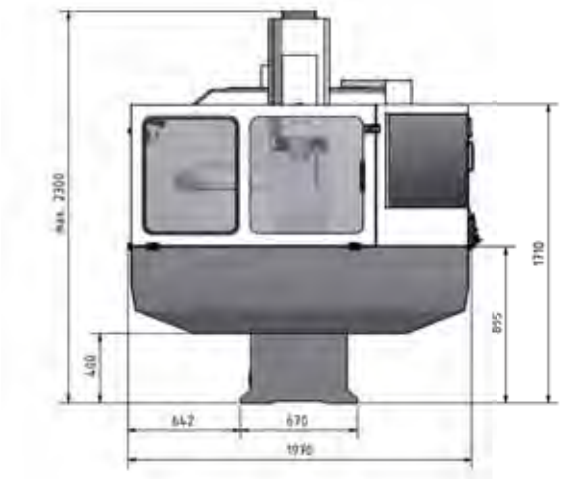
Siemens 828 D equpped with SINUMERIK Operate

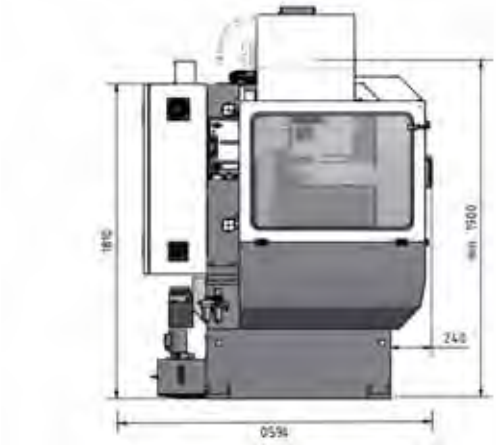
Siemens 828 D high performance CNC control for maximum accuracy and operating speed

Our options includes:

- Safety Integrated
- Rest material recognition and manufacturing
- ShopMill/ShopTurn working step programming
- Administrating network drive
- 3-D simulation

Dimensions





New
in the product range

Fig.: **F 110 TC- CNC**

- Pneumatic tool clamping device for easy tool change
- Built-in bright machine lamp
- All paths are equipped with mobile stainless steel covers

- Automatic tool change system by means of magazine disc for 10 tools
- Tool change speed from 7 to 12 sec.
- Tool diameter max. 63 mm
- Tool length max. 300 mm

- Complete switch cabinet made by Siemens
- Highest European standard
- Components made by reknown manufacturers
- Limit stop and reference switch of contactless type

- Jack
- USB
- Ethernet
- Connections easy to access
- Easy to connect to the machine

CNC milling machine with tool changer - the compact solution for manufacturing of small series or series manufacturing in middle-sized companies with Siemens control 828 D equipped with Sinumerik operate

- Solid type
- Main spindle drive with high-performance servo motor by Siemens (12 kW)
- Spindle motor of 10'000 rpm as standard
- 3 step motors made by Siemens for the separate drive of the X-, Y- and Z- axis
- All guideways with special steel covers
- Linear guiding made by *HIWIN* on all three axes
- Automatic central lubrication of the machine
- Built-in machine lamp/coolant equipment
- Automatic tool changing system with 16 tool places
- Tool changes performed automatically or by the push on a button (electro-pneumatic tool clamping device)
- An electronic handwheel reduces the setting time to a minimum
- Solid, precise cross table, largely dimensioned and precisely machined surface
- Ground ball screw mady by *HIWIN* Ø 40 mm, 12 mm pitch
- Ball screws with highly precise bearings made by NSK
- All access doors are largely dimensioned in order to reduce cleaning and maintenance times to a minimum
- The front frame girder can be taken out and thus allows equipping performed using an underslung crane
- Including 2-year Siemens warrantee

Model	**F210 TC-CNC**
Item No	351 1125
€ plus VAT	**69'000.00**

Features	
Electrical connection	
Total connected load	20 kW 400 V ~50 Hz
Main coolant pump	550 W
Additional coolant pump	250 W
Spindle seat	
Spindle seat	7:24 BT40
Milling head capacity max.	Ø 63 mm
End mill capacity max.	Ø 32 mm
Milling feed	10'000 mm/min.
Fast motion in all three axes	15'000 mm/min.
Milling accuracy	
Repeating accuracy	0.007 mm
Positioning accuracy	0.009 mm
Drill-mill head	
Travel Z axis	600 mm
Feed drive/Torque Z axis	11 Nm
Distance spindle - table	100 - 700 mm
Driving motor	12 kW (S1-mode; 9 kW)
Torque driving motor	57 Nm
Tool changer	
Disc type	16 tools
Time - tool changing	2 seconds
Speeds	20 - 10'000 rpm
Cross table	
Table length x width	1'000 x 450 mm
Travel Y axis	500 mm
Feed drive/Torque Y axis	11 Nm
Travel X axis	850 mm
Feed drive/Torque X axis	6 Nm
T-slot size	18 mm
Load of cross table (max.)	700 kg
Dimensions	
Length x Width x Height	2'454 x 2'120 x 2'641 mm
Tank capacity coolant	250 litres
Total weight	4'235 kg
Scope of delivery	Machine feet 6 pcs. Manual Cleaning gun

We imperatively recommend you to follow the instructions given by our specialist staff.

Siemens 828 D mit SINUMERIK Operate

Siemens 828 D high performance CNC control for maximum accuracy and operating speed

Our options includes:

- Safety Integrated
- Rest material recognition and manufacturing
- ShopMill/ShopTurn working step programming
- Administrating network drive
- 3-D simulation

SINUMERIK operate combines the known HMI-Advanced, ShopMill and ShopTurn under a continuous innovative operating and programming surface

New
in the product range

Fig.: **F 210 TC- CNC**

- Handy supply of the coolant by means of ring distributor
- Torque on the spindle
- 5 nozzles
- Switching on compressed air increases the effect

- Lubricating interval adjustable with regard to frequency and duration
- Acoustic warning signal if tank is empty

- Automatic tool change system by means of magazine disc for 16 tools
- Tool change speed 2 seconds
- Tool diameter max. 80 mm
- Tool length max. 300 m

- Complete switch cabinet made by Siemens
- Highest European standard
- Electrical components made by reknown manufacturers

Note: 2 days are required for the installation at the machine, commissioning and instructions. (refer to page 140)

CNC controlled flat bed lathe equipped with Siemens control, perfect for small series and training purposes

- Precise manufacturing
- A high chipping power is attained due to the powerful drive
- Braced machine bed made of grey cast iron
- Bed guideways inductively hardened (HRC 42-52) and precision ground
- Elaborate spindle bearing
- Guaranteed true running accuracy of the spindle nose of better than 0.009 mm
- True running accuracy at the lathe chuck of better than 0.04 mm
- High-performance, maintenance-free motor
- Brushless DC drive infinitely variable
- Emergency-stop pushbutton
- Central lubricating
- Incremental encoder for spindle positioning (threading)
- Right-/left handed rotation
- Ball screw spindle made by HIWIN.
- Reference switch
- Two electronic handwheel allow manual working
- Automatic quadruple tool changer for small series
- Easy to maintain protective housing
- Rear access flap for maintenance works
- Safety switch at the front door
- Coolant equipment
- Machine lamp

Model	**L 28 CNC**
Item No	350 4110
€ plus VAT	**13'900.00**

Features	
Electrical connection	
Power of the spindle motor	1.5 kW 230 V ~50 Hz
Coolant pump	40 W
Machine data	
Centre height	140 mm
Centre width	700 mm
Turning Ø over lathe bed	266 mm
Bed width	180 mm
Spindle speeds	30 - 4'000 rpm
Number of steps	4 Steps, speed adjustable
Spindle taper	MT 4
Spindle hole	26 mm
Quadruple tool holder seat height	(max.) 12 mm
Vorschub	
Travel X axis	180 mm
Travel Z axis	465 mm
Feed speed X axis	3'000 mm/min.
Feed speed Z axis	2'500 mm/min.
Tailstock	
Tailstock seat	MT 2
Tailstock - sleeve travel	85 mm
Dimensions	
Length x Width x Height (opened)	1'985 x 750 x 1'520 (1'980) mm
Frontdoor Length x Width	1'360 x 670 mm
Total weight	420 kg
Scope of delivery	3-jaw chuck Ø 125 mm Fixed lathe centre MT2/MT4 HSS cutting tool Lathe carrier Operating tool

Siemens 802S base line

Most modern turning technology using Siemens CNC control

- High efficiency and flexibility
- Easy-to-operate and simple programming
- Easy data managment

„Sinumerik 802 S base line“ on page 176

We imperatively recommend you to follow the instructions given by our specialist staff.

Level	1	2	4	3
Speed	30 - 300 rpm	140 - 1'400 rpm	300 - 3'000 rpm	400 - 4'000 rpm
Torque	98 Nm	21 Nm	9.8 Nm	7 Nm

- Quadruple tool changer
- Servo motor equipped with worm gear pair
- Tool change controlled via CNC program
- Siemens control in slewable housing
- Handwheels for manual travelling
- Storage
- Emergency-stop pushbutton

- For coolant system (40 W)
- Tank capacity 12 litres

- Controller III
- Control of the axle drives

- Extractable chip tray
- Telescopic rail guides
- Coolant drain

CNC controlled flat bed lathe equipped with Siemens control, perfect for small series production and training purposes

- Precise manufacturing
- Strutted machine bed made of grey cast iron
- Bed guideways inductively hardened (HRC 42-52) and precision ground
- Elaborate spindle bearing
- Emergency-stop pushbutton
- Central lubricating
- Incremental encoder for spindle positioning (threading)
- Right-/left handed rotation
- Ground ball screw spindles
- Reference switch
- Two electronic handwheels allow manual working
- Automatic 6-fold tool changer for series production
- Easy to maintain protective housing
- Rear access flap for maintenance purposes
- Safety switch at the front door
- **Siemens Micromaster** as frequency converter
- Coolant equipment
- Control via Controller IV
- Machine lamp

Model	**L 33 CNC**
Item No	350 4115
€ plus VAT	**20'900.00**

Features	
Electrical connection	
Total connection	3.5 kW 400 V ~50 Hz
Power of the spindle motor	3 kW 400 V ~50 Hz
Coolant pump	40 W
Machine data	
Centre height	165 mm
Centre width	750 mm
Bed width	187 mm
Number of tools	6
Spindle speeds "L"	80 - 1'200 rpm
Spindle speeds "H"	500 - 3'000 rpm
Torque-spindle motor "L"	36 Nm
Torque-spindle motor "H"	16 Nm
Spindle taper	Camlock D 1-4"
Spindle hole	38 mm
Quadruple tool holder seat height	(max.) 16 mm
Feed	
Travel X axis	165 mm
Travel Z axis	600 mm
Pitch of ball screw X axis	4 mm
Pitch of ball screw Z axis	6 mm
Feed drive/Torque X axis	8.4 Nm
Feed drive/Torque Z axis	10 Nm
Positioning accuracy X axis	0.015 mm
Positioning accuracy Z axis	0.02 mm
Repeating accuracy X axis	0.007 mm
Repeating accuracy Z axis	0.009 mm
Feed speed *	2'000 mm/min.
Tailstock	
Tailstock seat	MT 3
Tailstock - sleeve travel	120 mm
Dimensions	
Length x Width x Height (geöffnet)	1'595 x 845 x 1'560 mm
Total weight	1'000 kg
Scope of delivery	Operating tool

The indicated feed speeds are determined in the 1/16 step procedure
We imperatively recommend you to follow the instructions given by our specialist staff.

Siemens 802S base line

Most modern turning technology using Siemens CNC control
- High efficiency and flexibility
- Easy-to-operate and simple programming
- Easy data managment

„Sinumerik 802 S base line“ on page 176

New
in the product range

- Rapid and safe tool change
- 6-fold tool changer
- High repeat accuracy

- Cable duct centrally via energy chain
- Reference switch of mechanic type

- Two-stage gearing for powerful transmission of the motor power

- Spindle encoder

for cost-efficient, time-saving and economic working

SYMplus milling is the perfect software add-on for all milling machines made by Optimum equipped with Siemens control.

CNC software SYMplus milling	358 3850	**2'200.00**
• Version 5.2		
Upgrade SYMplus milling - 802 D SL Pro	358 3851	**750.00**
• Simulator and post processor		
Upgrade SYMplus milling - 840 D SL	358 3856	**750.00**
• For Siemens control 828 D		
• Simulator and post processor		

NEW

This training software supports the rapid training for the operation of the control Sinumerik 802S. The employees who are having little CNC experience can learn the basics of the DIN programming using the SYMplus and finally also write and test programs using 802S cycles. But first of all, SYMplus is an 2½D-CAD/CAM system which is easy to learn allowing you to save programming times, to avoid crashes and to reduce production times.

The software is subdivided in four modules:

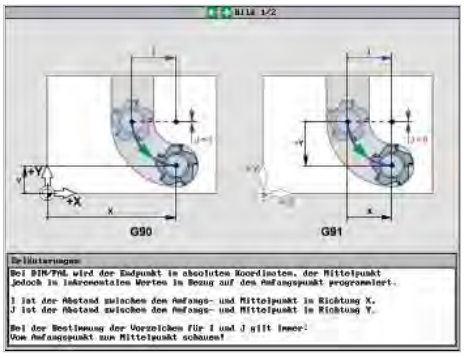
SYMplus Milling: Module SHOP

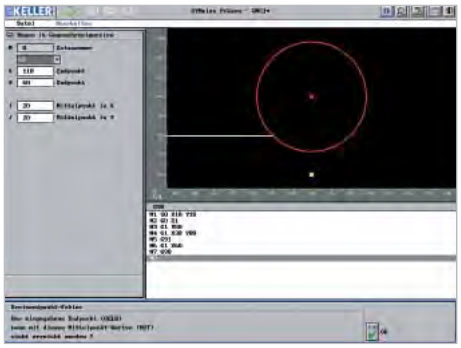
◄ Practise here typical repetetive sequences of action to setup the Sinumerik 802S.

Also interactively practice the key sequences to ► program the Sinumerik control.

The realistic designed machine ► (with noises) will give you the feeling to practice very near to reality - without any stress of real risk of crash.

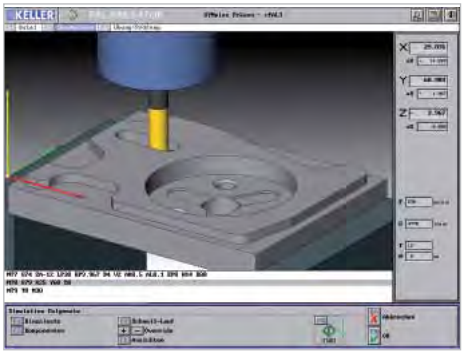
SYMplus Milling: DIN/ISO module





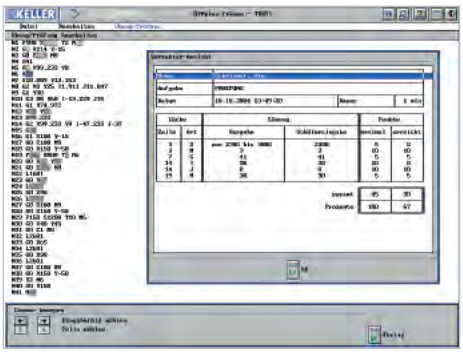
◄◄ Using this module you can learn or freshen up the geometric basis of DIN programming.

◄ There is a contact help and graphic support for error analysis.



◄ Complete DIN programs can be edited using a guided editor, checked for errors and simulated.

A test module is included for ► your trainees. The evaluation is performed automatically.

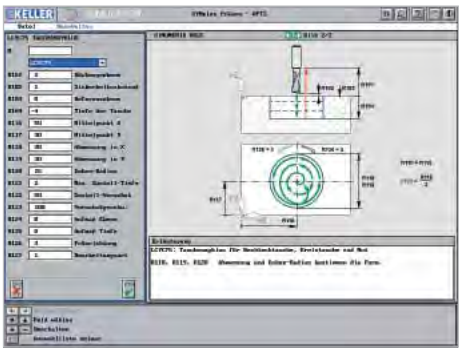


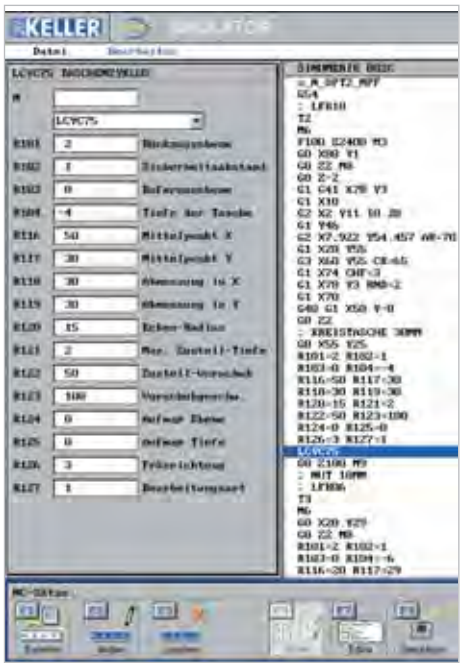
SYMplus Milling: Module CONTROL

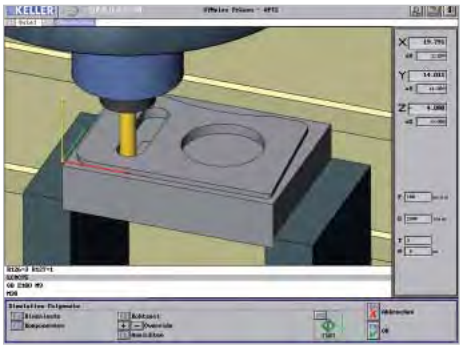
Here you can write and simulate programs using 802S cycles and commands.

The clear editor allows you to work efficiently.

Help graphics are available for all commands and cycles.





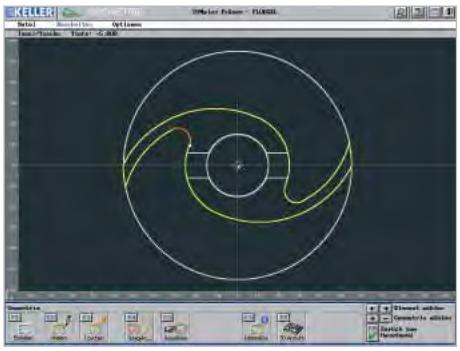


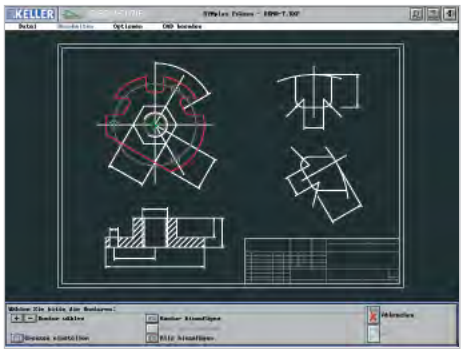
Simulator for 802D is available as upgrade

SYMplus Milling: Module CAD/CAM - Geometry

Unequaled quickly and simple you can graphically program workpieces using SYMplus even if the drawing is not dimensioned according to the NC dimensioning.

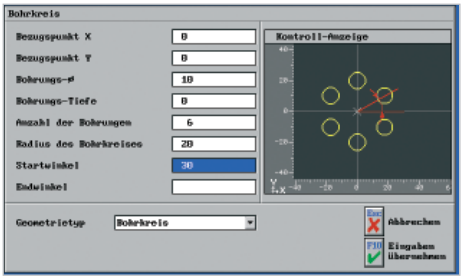
Alternatively you can load and output CAD contours.

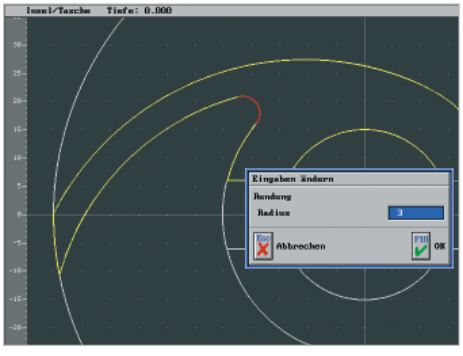




There are geometric macros for rectangles, circles, polygons, drilling images and text engravings.

Value entries are immediately dynamically converted.



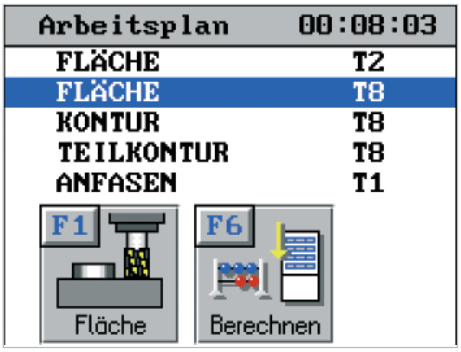


It is also possible to subsequently change any construction data within short time.

It is possible to create symmetric contours by mirroring/turning, etc. Also overmeasure geometries can be created by a few mouse clicks.

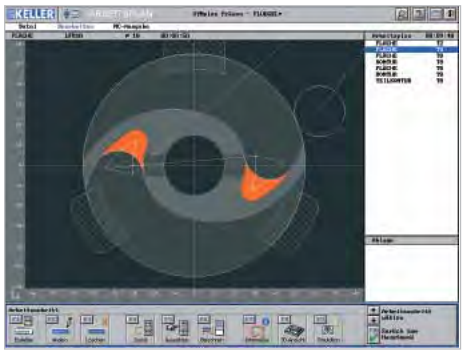
CNC

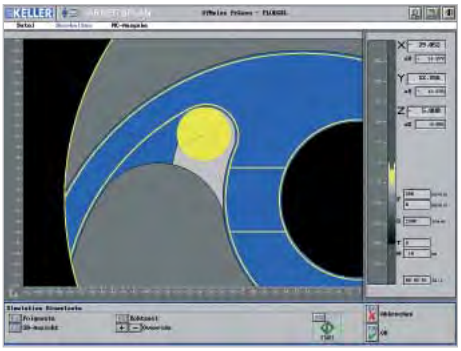
SYMplus Milling: Module CAD/CAM - Workplan



◀ Also the processing is determined graphically by pictograms. You can very easily compare the production strategies and in this way, optimize the processing.

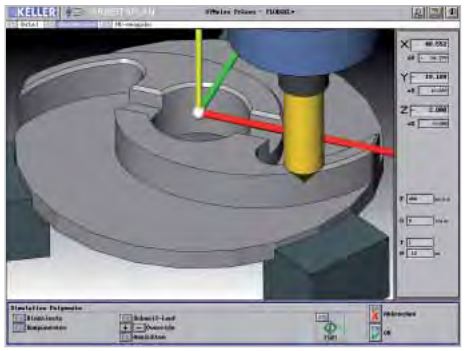
The time calculation will help calculating. There are no air chips (the red zones indicate the remaining material). Collision checks are performed for all tool paths. ▶

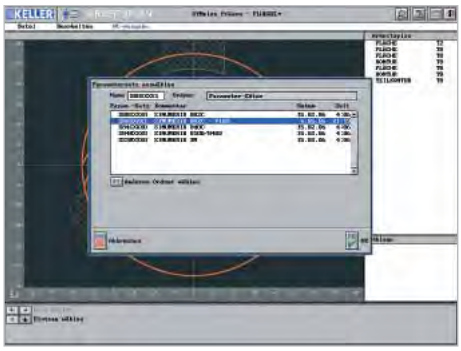


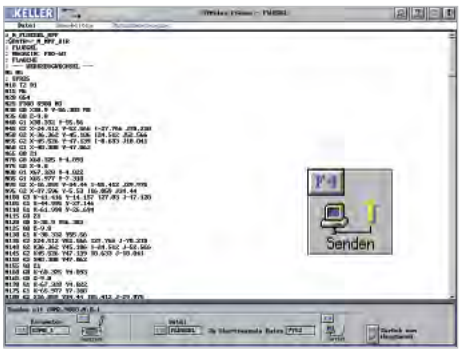


◀ The 2D simulation shows lots of details in the view from the top such as e.g. overmeasures and the cutting trace of the single milling path.

The 3D simulation will give you the best overview of the operations. Also chamfers and sinkings are easy to detect. ▶



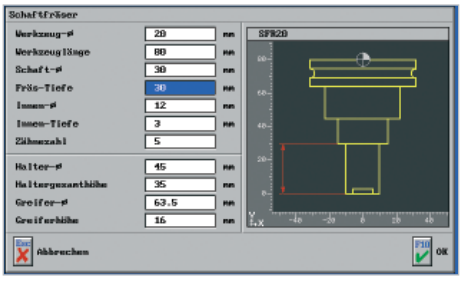




◀◀ The NC program for the 802S is created by a mouse click. The post processor for the control 802D of the machine OPTI F100 TC CNC is available as part of an upgrade. Other post processors are available upon request.

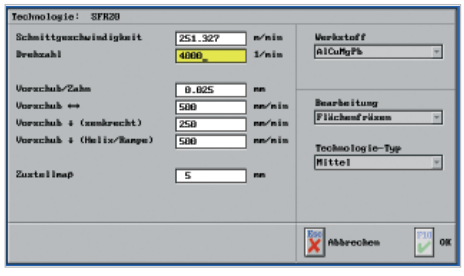
◀ The data transfer is directly performed from the SYMplus to the control of the machine.

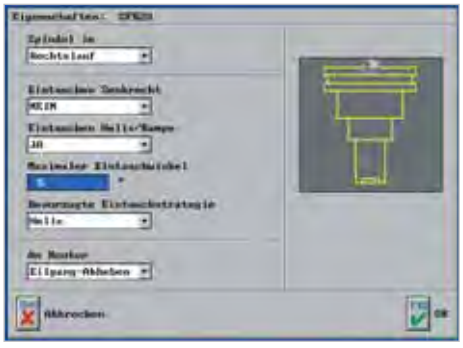
SYMplus Milling: Setting up tools, etc.



◀ Tools can be entered geometrically including shaft and holder – this is important for the crash control.

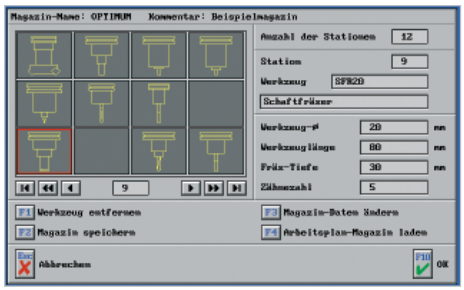
Depending on the material and the operation mode you can save the cutting data for each tool. ▶





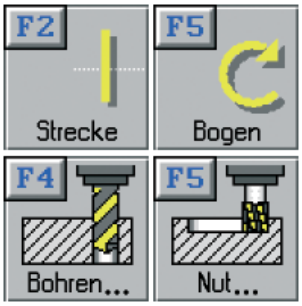
◀ You can also save the preferred plunging strategy for pocketing (here helical can be preset with max. 5°).

The tools can be individually configured in magazines. ▶



SYMplus Milling: CAD/CAM functionality at a glance

Geometry



- Interactive contour setting via pictograms. Any contour, rectangle, circle, polygon, drilling images, text
- Constructions of variants to simply change contours, bidirectional CAD interfaces (DXF, IGES)
- Measuring functions, 3D display at any point in time of the construction incl. calculation of volumes and masses

Workplan

- Strategies reducing the production time by detection of residues over the whole processing, working with any unmachined parts
- Face milling, surface milling (pockets, islands), contour parallel or shaded with different plunging strategies (helical, ramp, vertical), contour milling, chamfering, grooving, engraving text, handwheel (teaching) clamping, drilling, sinking, grinding, threading
- Comprehensive collision check, taking the clamping devices into consideration
- 2D and 3D simulation with common types of machines, real time, preview of single records, magnifying glass
- Time calculation for the calculation and to optimize the working plan, automatically created tooling sheet
- Post processor(s) to generate NC programs for your control

Tool management, data transfer

- Tool management (geometric and technologic, depending on the material)
- NC editor for easy editing (copying, cutting, searching, replacing)
- Bi-directional data transfer via the serial interface (RS232)

SYMplus Milling: Versions, licenses, scope of delivery

- SYMplus Milling is available in the languages German, English, French, Spanish, Italian, Dutch, Polish, Hungarian and Slovakian. Other languages are available upon request.
- SYMplus will be delivered on CD-ROM. The license is protected by a USB dongle. The software package includes a manual and a 4-coloured exercise book of more than 130 pages.
- The software also always includes a SIEMENS post processor (fitting the control of the F100 CNC resp. F 100 TC CNC) to automatically generate the NC programs of your machine. A simulator for the control SINUMERIK 802S and an RS232 interface to transfer the data is also integrated by default. Additional post processors and/or simulators are optionally available.

SYMplus Milling: System requirements

- Commercial PC from e.g. Intel Pentium® IV on, operating system Microsoft Windows® 2000/XP
- Microsoft DirectX® from version 7 on or OpenGL from 1.1.2 on, Macromedia SHOCKWAVE PLAYER® Version 10.1.0.11 (included in the delivery volume), Direct3D compatible 3D graphic card (e.g. GeForce 2. 3. 4), screen resolution min 1024 x 768
- Min. 512 MB main storage, about 280 MB free hard disc storage
- PC keyboard and mouse. CD-ROM or DVD drive. Sound card and loudspeakers
- Serial interface for the data transfer, alternatively USB interface, USB interface for the dongle

.

New in the product range

CAD/CAM system including 802S training appropriate for shops

SYMplus turning is the ideal software add-on for the CNC lathes L 28 CNC and L 33 CNC made by OPTIMUM.

CNC software SYMplus turning	358 3852	2'200.00
• For Siemens control 802S base line		
• Version 5.2		

This training software supports the rapid training for the operation of the control Sinumerik 802S. The employees who are having little CNC experience can learn the basics of the DIN programming using the SYMplus and finally also write and test programs using 802S cycles.

But first of all, SYMplus is a CAD/CAM system which is easy to learn allowing you to save programming times, to avoid crashes and to reduce production times.

The software is subdivided in four modules:

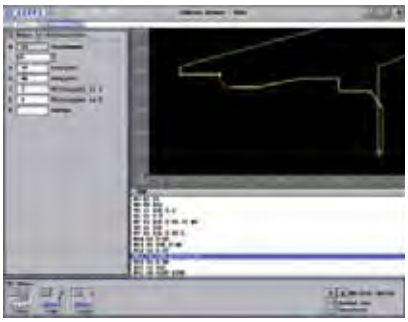
SYMplus turning: Module SHOP

◄ Practise here typical repetitive sequences of action to setup the Sinumerik 802S.

Also interactively practice the key sequences to program the Sinumerik control. ►

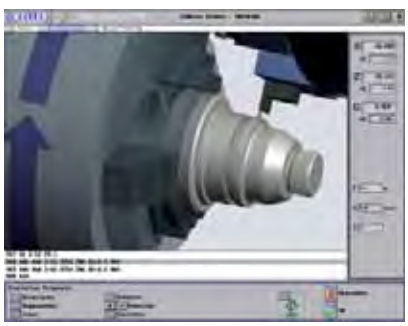
The realistic designed machine (with noises) ► will give you the feeling to practice very near to reality - without any stress of real risk of crash.

SYMplus turning: DIN/ISO module



◄◄ In this module it is possible to learn or freshen up geometric basis of the DIN/PAL programming.

◄ There is a context help and graphic support for error analysis.



◄ Complete DIN/PAL programs can be edited using a guided editor, checked on errors and simulated.

A test module is included for your trainees. ► The evaluation is performed automatically.

SYMplus turning: Module CONTROL

Here you can write and simulate programs using 802S cycles and commands.

The clear editor allows you to work efficiently.

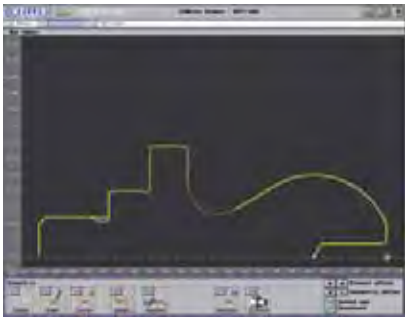
Help graphics are available for all commands and cycles.

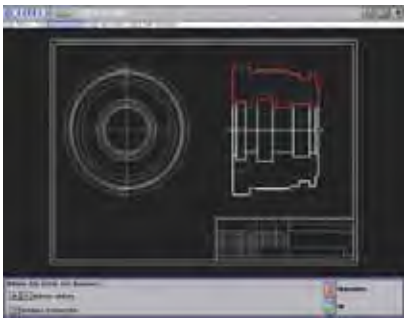
Simulators for all other controls upon request (e.g. SINUMERIK 840D, 802D).

SYMplus turning: Module CAD/CAM - Geometry

Unequaled quickly and simple you can graphically program workpieces using SYMplus even if the drawing is not dimensioned according to NC dimensioning.

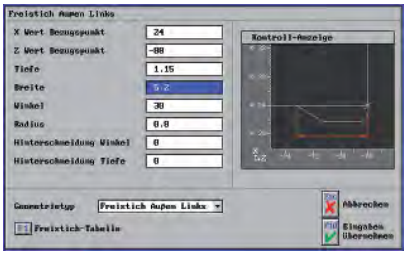
Alternatively you can load and output CAD contours.





Geometry macros are available among others for grooves and undercuts. For thread undercuts a table according to DIN76 is stored.

Value entries are immediately dynamically converted.



It is also possible to subsequently change any construction data within short time.

Fit sizes (about 48h7) can be directly entered, average tolerance is automatically proposed as nominal dimension

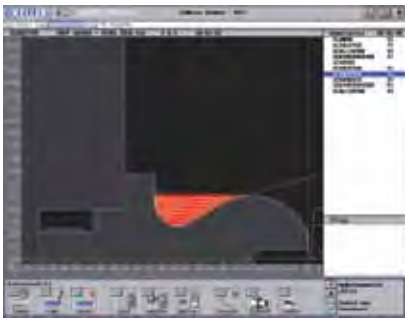
New in the product range

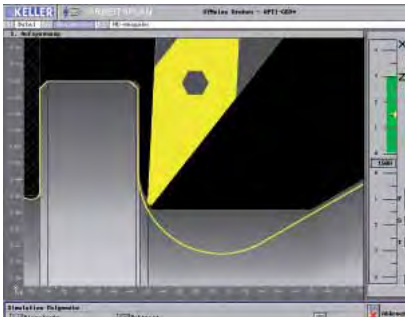
SYMplus turning: Module CAD/CAM - Workplan

◄ Also the processing is determined graphically by pictograms. You can very easily compare the production strategies and in this way, optimize the processing.

The time calculation will help calculating.

There are no air chips (the red zones indicate the remaining material). Collision checks are performed for all tool paths. ►





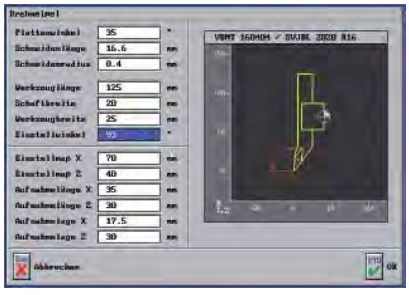
◄ The 2D simulation shows lots of details such as e.g. allowances. Here it is also possible to measure the workpiece

The 3D simulation will give you the best overview of the operations. ►

◄◄ The NC program for the SIEMENS control is created by a mouse click.
(Post processors for lots of other CNC controls are also optionally available).

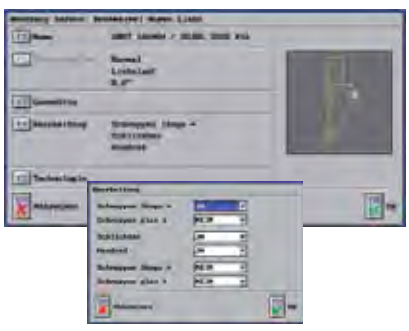
◄ The data transfer is directly performed from the SYMplus to the control of the machine.

SYMplus turning: Setting up tools, etc.



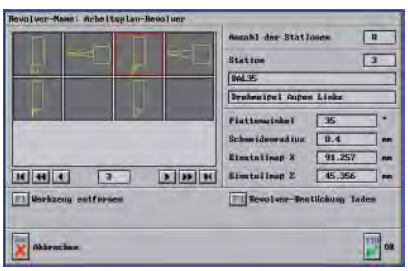
◄ Tools can be geometrically entered incl. setting angle, shaft and seat – this is important for the crash control.

Depending on the material and the operation mode you can save the cutting data for each tool. ►



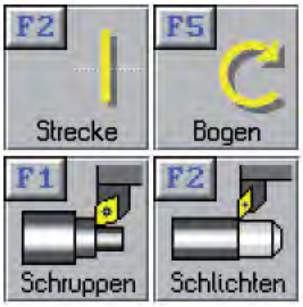
◄ The tool can be released or blocked for different treatments.

Finally the turret is equipped. Each equipment can be individually saved. ►



SYMplus turning: CAD/CAM functionality at a glance

Geometry



- Interactive contour setting via pictograms, any contour routings, cylinder, stage pins, tubes, grooves
- Constructions of variants to simply change contours, bidirectional CAD interfaces (DXF, IGES)
- Measuring functions, 3D display at any point in time of the construction incl. calculation of volumes and masses

Workplan

- Strategies reducing the production time by detection of residues over the whole processing, working with any unmachined parts
- Roughing plane and transversal finishing, engraving, contour engraving, plunch roughing, cutting-off, drilling, threading, thread turning, handwheel (teaching), re-chucking
- Comprehensive collision control
- 2D- and 3D simulation, realtime, single block preview, magnifying glass
- Time calculation for the calculation and to optimize the working plan, automatically created tooling sheet
- Post processor(s) to generate NC programs for your control

Tool management, data transfer

- Tool management (geometric and technologic, depending on the material)
- NC editor for easy editing (copying, cutting, searching, replacing)
- Bi-directional data transfer via the serial interface (RS232)

Versions, licenses, scope of delivery

- SYMplus Turning is available in the languages German and English. Other languages are available upon request.
- SYMplus will be delivered on CD-ROM. The license is protected by a USB dongle. The software package includes a manual and a 4-coloured exercise book of more than 130 pages.
- The software also always includes a SIEMENS post processor (fitting the control of the Optimum machines) to automatically generate the NC programs of your machine. A simulator for the control SINUMERIK 802S and an RS232 interface to transfer the data is also integrated by default. Additional post processors and/or simulators are optionally available.

System requirements

- Commercial PC from e.g. Intel Pentium® IV on,recommended operating system Microsoft Windows® 2000/XP
- Microsoft DirectX® from version 7 on or OpenGL from 1.1.2 on, Direct3D compatible 3D graphic card, screen resolution min. 1024 x 768
- Min. 512 MB main storage, about 280 MB free hard disc storage
- PC keyboard and mouse. CD-ROM or DVD drive. Sound card and loudspeakers, if necessary
- Serial interface for the data transfer, alternatively USB interface, USB interface for the dongle

The SINUMERIK to access the CNC world

Sinumerik 802 S base line

The ideal CNC for standard applications

The perfect control for starting:

- Easy to operate and to program
- Rapid, easy setting up of tools and workpieces
- Cycle and contour-supported programming

The CNC control for different applications:

- Controls up to 3 axes and 1 spindle
- Complete unit of compact dimensions
- Maintenance-free, since it is working without batteries and fans
- Easy connection by pulse/direction interfaces (feed axes) resp. ± 10 V analogue interface (spindle)
- Standard solution with worldwide service for different applications

The SINUMERIK 802S base line offers you lots of advantages:

- Easy CNC programming in DIN 66025
- Easy measuring of tools by scratching
- Contour elements as programming aid
- Cycle support for complex applications
- Spindle pitch error, batch and measuring system error compensation for precise processing results

Turning cycles:

- Grooving
- Undercut
- Machining
- Thread cutting*
- Drilling, spot facing
- Deep hole drilling
- Tapping with/without compensation chuck*
- Drilling

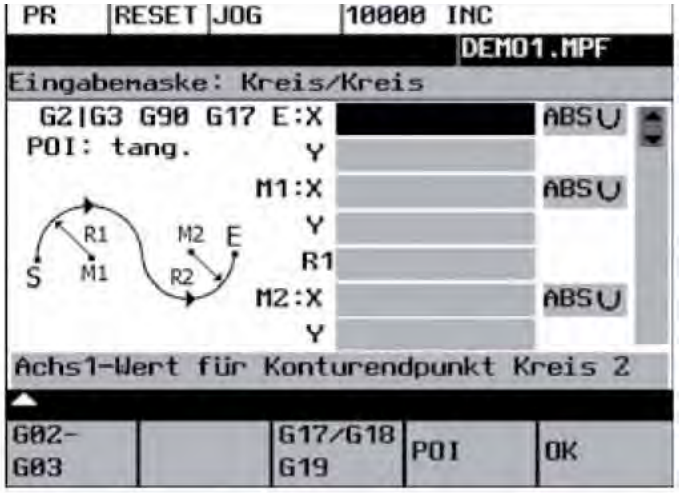
Milling cycles:

- Deep hole drilling
- Thread cutting with/without compensation chuck
- Row of holes – circle
- Row of holes – line
- Drilling, countersinking
- Milling of pockets, grooves and circular pockets

Other features:

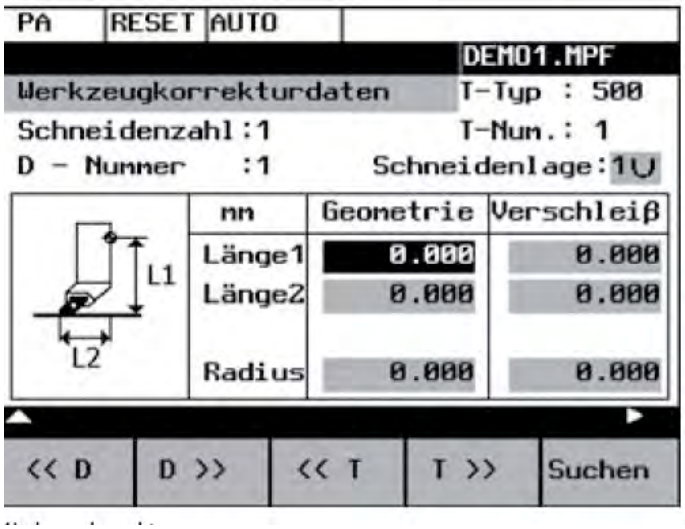
- Processing from external – also processes larger CNC programs via the RS 232 C (V.24) interface
- Manual machine – operation of a lathe also as conventioal (cyclic) machine
- Teach in function (optional) – program entry by means of handwheels or direction keys
- Extremely robust – due to compact design
- Powerful PLC – for perfect adaptation to the machine tool (SIMATIC S7-200 compatible)
- 256kb program memory

*depending on the machine type



Programming

- Program entry according to DIN 66025
- High level language elements and R-parameters for modular and efficient programming
- Graphic programming by means of contour routing support
- Integriated turning and milling cycles with graphic input masks
- Teach in (optional) for program entry by means of handwheels or direction keys



Tool corrections

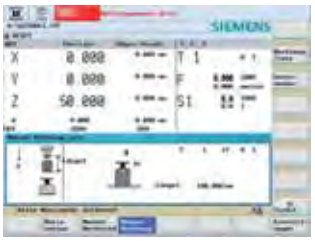
Tool management

- 15 tools and 30 cutting edges
- Tool length compensation
- 2D tool radius compensation
- Measuring cycles for easy workpiece and tool measurement

The SINUMERIK control offers all necessary functions for tool and mould making with 3-axis

Manual tool measurement in the JOG mode

- **Graphic support for measurement of tool length and tool diameter**
- Simply have the spindle turn, touch the workpiece with the tool and enter the position of the edge
- The tool correction is automatically calculated and taken over to the tool list



Automatic tool measurement in the JOG mode

- Simply move the tool beside the measuring probe and press the button "Start“. The tool geometry is automatically determined by the control
- Calibration of the tool measuring probe also with graphic instructions for the individual working steps

Tool list and tool life monitoring

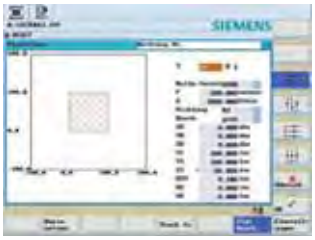
- Tool geometry and wear in a mutual list
- Symbol for tool type milling cutter resp. drill bit
- Individual password protection, e.g. allow max. 0.5 mm as input value for tool wear in order to avoid collisions
- Tool life monitoring and monitoring of the number of pieces already in the standard

Workpiece measurement

- Graphic support to set the zero point of the workpiece
- Select via dialog in which zero point offset the results shall be entered, e.g. G54
- Direct jumping between the mask to the workpiece measurement and the list of the zero point offset – check results in shortest time

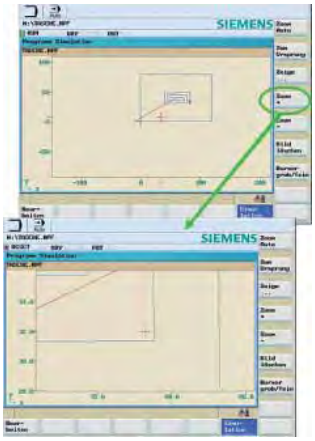
Surface milling of the unmachined part in the MDA mode

- Dialog based entry of processing parameters complete with tool, feed, spindle speed and processing strategy
- Need to create processing without a part program: The program is automatically created by pressing the OK key
- It is possible to save the MDA sets as program



Handling of part programs

- Handling of part programs in the same way as on a PC with functions such as copying, inserting, renaming
- Before editing it is possible to rapidly check the first rows of a part program in the preview window
- All part programs on the machine due to a giant user memory: 3MB standard
- Programs can be easily recognised by clear text names
- Sub-directories available



CF card function included by default

- Slot for the CF card directly at the front side of the control panel, no adapter required
- Hot plug-in of the card which is immediately recognised
- Cover can be closed when card is inserted, providing optimum protection of the card
- Processing of the card (DNC mode) without loss of speed in comparison to programs in the NC memory

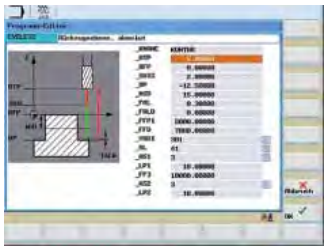
Simulation of programs

- Graphic simulation of the tool path to check the part program before execution
- Clear presentation by using different colours: Rapid traverse = red, Feed = blue
- Hint: It is possible to show the result of the simulation within shortest time using the trial run feed

Programming with G code

- Complete G code editor. Easy programming by using the functions copy block, insert, delete, search, numbering automatically / re-numbering
- Programming according to DIN66025 and in the ISO dialect including ISO cycles. Mixed programming using the commands G290/G291 is available
- Unlimited number of programmable zero point offsets, scaling, mirroring, rotating using the commands TRANS, SCALE, MIRROR, ROT
- R parameter 300 predefined calculating variables in the floating-point format, e.g. Go X=R100 Y=R101
- User variables including name display in clear text. Local user data can be defined with name and type
- System variables access to tool corrections, axes positions, measured values, etc., e.g. R1=$AA_MW[X] for position of the X-axis in the workpiece coordinate system
- Combination of variables. Calculating operations: + - * / sin cos exp, logic operations: == ‹› ›= etc.e.g. G1 X=R1 Y=30*SIN(R1)

Technology cylces for standard operations



- Milling, planing, contour milling, squared pocket and cones, circular pockets and cones, oblong holes on a circle, grooves on a circle, circular grooves, thread milling
- Drilling centering, drilling, reboring, rubbing, deep hole drilling, thread drilling, drilling pattern line / circle

Contour calculator

- Easy input of the workpiece geometry: "Painting by numbers“ as for ShopMill
- Determining contours is also possible with lots of unknown intermediate values
- By clicking on the button "Retranslation“ it is possible to subsequently modify the input values in the dialog mask, e.g. in order to modify radiuses and chamfers

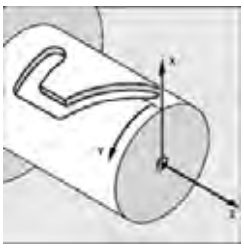
Integrated calculator

- Application example: Modifying the zero point offset G54 for the X-axis
- Selecting input field in the offset table, then press “=“ on the CNC keyboard in order to open the calculator. The current value is taken over
- Performing calculation and saving the result again in the input field of the offset table
- No calculation or typing mistake

Integrated user manual

- Documentation for operation & programming directly on board
- Display the contents by pressing the help key on the CNC keyboard
- Context sensitive help: Pressing the help key if the cursor is on tab of a cycle parameter. The corresponding page of the user manual opens up

Powerful functions for operations using the 4th axis



- Full functionality for the machining centre with rotary table and dividing attachment
- Processing lateral areas: Programming run of any groove simply referring to the rubbed off plane lateral area of a cylinder. Subsequently the function TRACYL transforms the processing step automatically to linear and round axis movement
- Other typical applications: Several workpieces are clamped on a dividing attachment, 4-axis part programs of the CAD-CAM systems
- TRACYL and 4-axis interpolation are standard operations

Maintenance-free operation and comfortable diagnosis options

- Particularly reliable since SINUMERIK 802D sl is not equipped with hard disc, battery or fan
- Complete data backup on CF card including all drive data by pressing one single key
- SPS contact plan with two windows and E/A status. Complete comfort comparable to working on a PC allowing zooming, searching, symbol information and referencing

Remote diagnosis

- RCS802 software for PC for remote diagnosis via serial interface. Even via Ethernet when using 802D sl
- Also for networking of the PC with several machines only one PC licence for remote diagnosis via Ethernet is required
- Advice: Remote diagnosis function is useful as screenshot on the PC also for training purposes

New in the product range

High performance CNC control for maximum accuracy and processing speed

- Front interfaces
- RJ45 Ethernet
- USB 2.0
- CF card

- Easily accessible connections
- Easy to connect to a machine
- Ethernet
- Socket
- USB

- 3/8" thread for additional components

- 10,4"
- TFT colour display

- Panel front made of magnesium pressure die casting

- QWERTY keyboard of high value
- Mechanic keys with protective film
- Protection class IP 65

- No battery (continuous data buffering thanks to NV-RAM technology)
- No fan
- No hard disc

All relevant functions at a glance due to horizontal and vertical softkeys.
Easy data handling by easily accessible slots for one memory media USB and compact flash card at the front

Using the SINUMERIK 828D a customer CNC control is available to you to be used in lathes and milling machines. CNC, PLC, user interface and the axis control for six CNC measuring circuits are summarised in a compact unit.
The control is equipped with comprehensive CNC functions, such as support of the counterspindle operations as well as drilling and milling operations at the front and lateral areas of workpieces.
In particular for lathes the SINUMERIK 828D offers comprehensive turning operations such as drilling and milling operations on the front and lateral areas of workpieces. The performance of the control and the new motion guiding allows you to manufacture surfaces as smooth as glass with a minimum of operating time.
Unnecessary functionalities were omitted in the SINUMERIK 828D which can be recognised among others in the graphic operating interface. Therefore, it is also perfectly appropriate to be used in a shop. Even operation, programming and maintenance are quickly controllable without excessive training.

Performance

The 828D is available with the following performances:

Scope	
Minimum block cycle time	~6 ms
CNC main storage	3 MB
Maximum number of tools/cutters	128/256
Maximum number of axes/spindles	6

CNC operation in the manual mode (JOG)

TSM universal cycle
A universal cycle is available in the setting mode for the most used machine functions:
- Tool change with direct access via the tool table (T)
- Spindle speed and –direction (S)
- M functions (M)
- Activating of zero offsets

Turning cycle
In the setting mode a comfortable turning cylce is available. Using this cycle it is for instance possible to turn smooth clamping jaws.
It is possible to preset the following parameters:
- Roughing resp. finishing
- Undercut for smooth clamping jaws

Measuring workpiece
You can measure the workpieces as follows:
- Reference tool

Zero point offsets
The following adjustable zero point offsets are at your disposal:
- A basic offset
- Maximum 99 zero offsets (G54, G55 ...)
- Each zero point offset with axis rotation and fine offset

Tool management

Tool table
You can manage tools including their complete use data in the tool list.
The maximum number of tools/cutters amounts to 128/256
- The function loading allows to assign the tools to the required magazine positions.
- You can store the following data for each tool:

– Tool type: e. g. roughing, finishing, engraving, drilling and milling tools
– Clear tool name in clear text, example: ROUGHING_80DEGREE
– Max. 9 cutters for each tool
– Tool lengths and cutting insert geometry
– Point angle for drilling and number of theeths for milling tools
– Spindle turning direction and coolant (Step 1 and 2)

- Direct taking over of the tool from the list to the program resp. to measurements

Werkzeugliste
Platzanz 1
Platz Typ Werkzeugname ST S Länge X Länge Z Radius Pt-Sing
1 SCHRUPPER_80 1 1 138.132 30.890 0.800 93.0 80 11.0
2 SCHRUPPER_55 1 1 134.310 35.820 0.800 93.0 55 11.0
3 SCHLICHTER_35 1 1 131.620 33.820 0.400 93.0 35 11.0
4 FRAESER_8_ST 1 1 41.320 30.000 6.000 4
5 ZENTRIERER_ST 1 1 12.320 87.210 3.000 118.0
6 BOHRER_5_ST 1 1 11.000 106.200 5.000 118.0
7 GEBO_ST 1 1 8.500 87.000 5.000 1.000
8 STECHER_3 1 1 65.720 26.420 0.100 3.000 11.0
9 GEWINDESTAHL_1.5 1 1 45.080 48.310 0.200
10 SCHRUPPER_80 2 1 138.130 30.820 0.800 93.0 80 11.0
11 SCHRUPPER_80 3 1 138.150 30.840 0.800 93.0 80 11.0
In Manuell
Schneiden
Entladen
Werkzeug löschen
Magazin anwahl
Sortieren
Werkz. Info
Werkz. versch
Maga-zin
Hulp. verzch
Anwen. variable
Setting-daten

Monitoring service life and number of pieces

Using the SINUMERIK 828D you can monitor the service life of your tools and the number of exchanges. You can give clear names to your tools instead of little significant numbers. At the latest when reading the CNC program you will appreciate this comfort.
- Monitoring contact time (T) in minutes or number of exchanges (C)
- Early warning threshold for making available new tools in time
- If the required tool is not in the magazine the SINUMERIK 828D prompts you to perform a manual change.

Spare tools

If required you can also manage spare tools (sister tools) with the SINUMERIK 828D. Tools of the same name are created as spare tools. In the column ST the spare tools are marked with an ascending number.

New in the product range

User memory

Buffered CNC main memory CNC main memory 3 MB

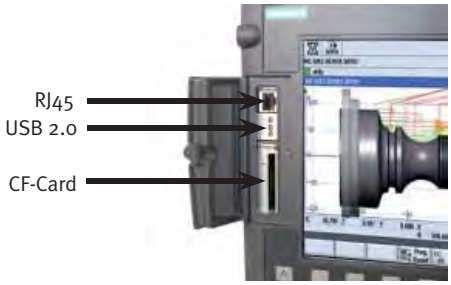
Memory extension by compact flash card

The SINUMERIK 828D is equipped with a slot for a compact flash card directly at the front of the operating panel.
- Cover to protect against dirt lockable if card is inserted
- No special software required for reading or writing the card on the PC

Data transfer

Interfaces

The SINUMERIK 828D is equipped with the following interfaces at the front of the device. It is possible to access the corresponding memory media via the program manager.



Program manager

The program manager offers you an optimum clear arrangement of the directories and programs and a very comfortable file handling. It supports clear text names for directories and files with up to 24 characters. It is also possible to manage sub-directories on the external memory media such as CF card and USB stick. All memory media including the network drives are visible in the program manager. You can edit the part programs on all media.

Data transfer via serial interface

The SINUMERIK 828D allows you an easy data transfer from and to the PC via the RS232C interface. The main application is the data backup of part programs.

Data transfer by USB memory stick resp. compact flash card

RCS commander

The RCS commander is an efficient PC tool free of charge which allows you to easily transfer the data on the CNC control via drag & drop. Furthermore, you can easily view the screen contents of the CNC on the PC. Just connect your PC or notebook to the installed RCS commander via the Ethernet interface at the front. The SINUMERIK 828D automatically resumes the network configuration. Knowledge about networks is not required. Using the SINUMERIK 828D it is also possible to perform a remote diagnosis via Ethernet. You only need a PC licence for the remote diagosis via
Ethernet for networking the PC to several machines. All diagnosis functions of the machine to a control are also available for the remote diagnosis.

Ethernet networking

The SINUMERIK 828D is prepared for networking via Ethernet (TCP/IP) (RJ45 connection).
- The data transfer rate amounts to 10 / 100Mbit/s.
- Remote access to the control via the RCS commander e.g. for commissioning and remote diagnosis
- The access to the network drives is directly performed in the program manager. No additional software is required on the server.

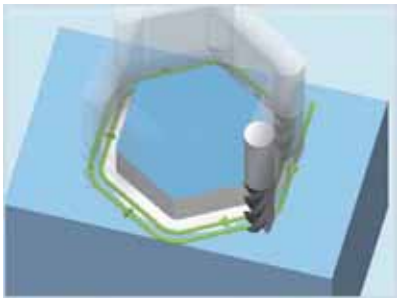
Easy message

Using easy message you can easily receive the process information e.g. about the wearing condition of tools by SMS on your mobile phone.

Graphic support functions

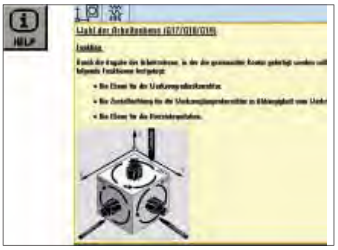
Animated elements

By way of illustration which parameters are having which effect in processing a new input support including moving picture sequences are available in the SINUMERIK 828D.
E.g. the difference between constant and changing cutting depth for machining or turning direction of main and counterspindle when taking over the workpiece for the processing of the rear side are shown.



Onboard documentation

The SINUMERIK 828D automatically fades in a help in the form of a "Cursor text" for each input field of the visualisation masks. For further information the SINUMERIK 828D offers a complex context sensitive help system with lots of useful details and graphs.



CNC operation in the automatic mode (AUTO)

Block search

In the machine condition reset, e.g. after a program termination or for targeted re-assuming of the processing it is possible to perform a block search. At this the program data are prepared in a way that all relevant parameters (tool, zero point offsets, M-functions, etc.) are available when accessing the program.
The following search variants are available:

- Targeted to the interruption position
- On any CNC record in the DIN/ISO programs
- In any sub-program levels for DIN/ISO programs
- In work planning programs
- In position patterns for work process programming
- Accelerated block search for large mould making programs

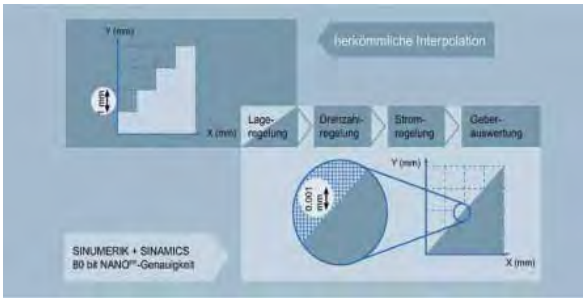
Drawing

During the processing of the machine it is possible to draw the tool pathes on the screen of the control in lateral view, front view, 2-window view and 3D view.
The presentation and views of the workpiece correspond to the graphic simulation.

CNC performance and optimisation functions

80bit NANO FP accuracy

The accuracy of the workpiece is not only determined by the mechanic of the machine. Also the CNC control contributes at a decisive rate to the accuracy of the workpieces. The SINUMERIK 828D is offering a number of CNC
functions for these accuracy.
The SINUMERIK 828D and the SINAMICS drive calculate with an 80 bit floating point accuracy. This allows a calculated accuracy much below one nanometer. This accuracy is not only available for the position control but also for the current and speed control as well as for the encoder evaluation of the drive.
Maximum accuracy of the workpiece results due to extremely high calculation accuracy



Limitation of jerk

Instead of a rapid change of acceleration the control calculates a continuous acceleration profile. This allows a jerkfree speed curve of the corresponding path axes. The limitation of jerk can also be activated directly in the part program by means of the
NC voice command "SOFT".

- Longer service life of the machine since the mechanics is treated with care
- Higher path accuracy due to smoother acceleration

Dynamic pilot control

Inaccuracies are for resulting workpiece contour, caused by contouring errors, can almost be eliminated by the dynamic pilot control FWON. This also results in an outstanding processing accuracy at high path speeds. This is especially apparent when performing a circularity test on the machine.

- Higher path accuracy by compensating a contouring error

SHOP MILL

ShopMill is a customised technology package for all worldwide used standard CNC milling machines.
The focus of this machines is in the manufacturing of single parts and small series. ShopMill offers an easy operation of the machine tool appropriate for skilled workers.
All operating actions are supported by graphic help images.
The functions in the manual mode allow a rapid practice-oriented setting of the machine for processing. This is in particular determining the workpiece position in the machine as well as maintenance and measuring of the used tools.

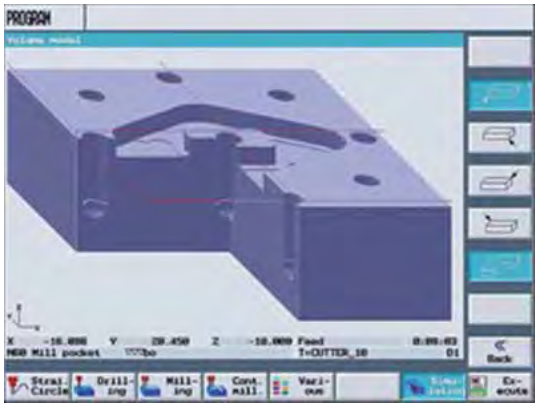
ShopMill offers two different programming tools for programing.

- The DIN/ISO editor serves to create DIN/ISO programs on the machine as well as to correct externally created DIN/ ISO programs.
- The work schedule editor serves for graphic programming on the machine.

In this way ShopMill offers a uniform control configuration which covers all worldwide demanded fields of application without subsequent commissioning efforts:

- Easy user interface for all machine functions
- DIN/ISO programming on the machine or offline via CAD/CAM system
- Graphic programming
- Mould making applications
- Measuring functions

ShopMill - Highlights

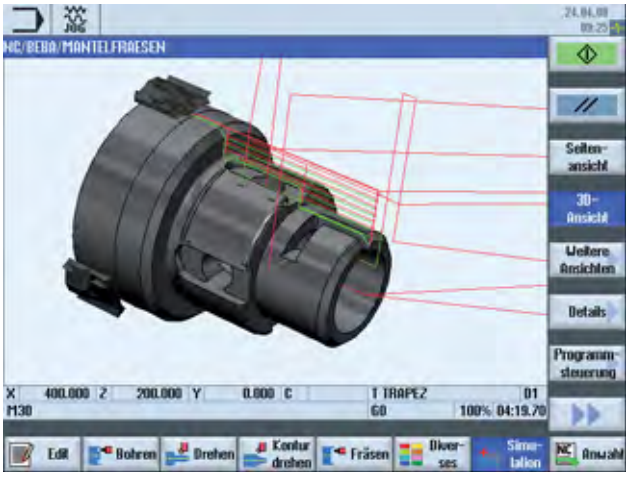


- Flexible programming by graphic interactive (without DIN/ISO knowledge) or textual programming input with practical cycles also for the use in the tool making and mould making
- User-friendly operation by practical setting and measuring functions, clear tool management and 3-D simulation
- Productivity increase by supporting PC software for the production planning without machine occupancy.

SHOP TURN

Machines are rapidly set up in the **ShopTurn** and workpieces as well as tools are rapidly measured. The operating and programming software ShopTurn distinguishes itself by a graphically supported program- and working schedule creation which allows to manufacture a workpiece also without knowledge of DIN/ISO program demands.

It is possible to call a graphic overall presentation of the workpiece by the push on a button from the working schedule. With the help of this dynamic line graphic programming errors are recognised and can be corrected rapidly.
Special advantage: The simulation allows to test the created working schedule. During the simulation run the productive time of the turned part is determined in parallel. In this way it is possible to program and simulate the workpiece in short time using ShopTurn after the request and additionally make a price statement by means of the evaluated manufacturing time: this means time-saving for the customer.



ShopTurn - Highlights

The following basic elements are available:
- Straight line X/Z also with C-axis
- Slope in X/Z or under angle also with C-axis
- Parameterisable circle by radius/ end point or centre point

Manual functions/Setting functions
Measure workpiece › Scrap workpiece in Z-axis
Measure workpiece › Measure workpiece by Tooleye
Measure workpiece by scrapping

Automatic functions
Block search (also for single holes of a drill pattern)
Automatic mode of operation
Working schedule test (Dry-Run)
Restarting at the contour
Block search
Operator panel OP 010 with ShopTurn mask

Other functions
The step by step working schedule creation allows you to characterise each step with easily understandable symbols, working schedule creation without DIN/ISO knowledge, easy changing, inserting and deleting of special commands (e.g. M functions), inserting of transition elements, executing record by record (single step)

Additional options
Easy to understand help images for each cycle
Scale graph for input support
Graphic working schedule test/test run
Creating/reading and processing of complete DIN/ISO programs
Technology input tool definition per working schedule step is possible
Tool and wear data for up to 128

Fig.: Device for height adjustment (1)

Fig.: Parallel spacer (2)

Fig.: Assembly and tool setting aid (3)

Fig.: Milling chuck (4)

Fig.: Quick-action drill chuck (5)

Fig.: Collet chuck fixture (6)

Fig.: Collet chuck kit (7)

Fig.: Adapter Morse cone (8)

Fig.: Surface milling cutter seat (9)

Fig.: Surface milling cutter (10)

Fig.: Draw-in bolt (11)

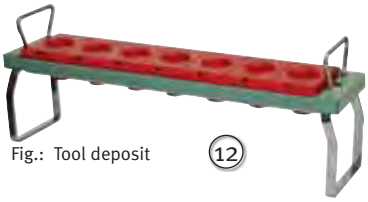


Fig.: Tool deposit (12)

Starter kit for OPTI F100 CNC/F110 TC-CNC/F210 TC-CNC	
Item No	353 6105
€ plus VAT	**1'290.00**

Consisting of:

(1) **1 device for height adjustment**
- Analogue type
- For rapid and easy determining of the reference point in the Z-axis and/or to set the tools "zeroing" (e.g. for milling or drilling) without damaging the workpiece
- Positioning device for height adjustment on the machine table or the workpiece and start machining the spring-mounted touch surface with the tool
- Housing height 50 mm

(2) **1 parallel spacer kit**
- Superfinished, accuracy of 0.01 mm
- Length 150 mm
- Width 8.5 mm
- 18 pcs sizes 2 x 14 mm/2 x 16 mm/2 x 20 mm/2 x 24 mm /2 x 30 mm/2 x 32 mm/2 x 36 mm/2 x 40 mm/2 x 44 mm
- Plastic box

(3) **1 assembly and tool setting aid BT 40**
- For easy and exact setting of the tools
- Weight 13 kg
- Vertical seat for tools with 7/24 taper shank

(4) **1 milling chuck - BT 40 SLA 20 - 90**
- To seat the 3-D pushbutton
- Lateral seal
- Lateral clamping surface

(5) **1 quick-action drill chuck 0 - 13 mm - BT 40**
- Including hook spanner for closing

(6) **2 collet fixture BT 40/ER 32**
- Accuracy 0.005 mm

(7) **1 collet kit ER 32**
- 18 collets 3 -12 mm

(8) **1 adapter Morse cone BT 40 - MT 3**

(9) **1 surface milling cutter seat - BT 40**
- 27 mm

(10) **1 surface milling cutter**
- 63 mm
- Bohrung 27 mm

Spare cutting inserts (10 pcs)
- Item No 353 0196
- **€ 95.00 plus VAT**

(11) **6 draw-in bolts BT 40 - 40 x 45°**

(12) **1 tool deposit for BT 40 tools**
- Dimensions L x W x H: 595 x 143 x 225 mm

Device for height adjustment | 353 6180 | **199,00**

- Analogue type
- For rapid and easy determining of the reference point in the Z-axis and/or to set the tools “zeroing” (e.g. for milling or drilling) without damaging the workpiece
- Positioning device for height adjustment on the machine table or the workpiece and start machining the spring-mounted touch surface with the tool
- Housing height 50 mm

Parallel spacer kit | 353 6191 | **129,00**

- Superfinished, accuracy of 0.01 mm
- Length 150 mm x Width 8.5 mm
- 18 pcs sizes 2 x 14 mm/2 x 16 mm/2 x 20 mm/2 x 24 mm/ 2 x 30 mm/2 x 32 mm/2 x 36 mm/2 x 40 mm/2 x 44 mm
- Plastic box

Assembly and tool setting aid BT 40 | 353 6187 | **119,00**

- For easy and exact setting of the tools
- Vertical seat for tools with 7/24 taper shaft
- Weight 13 kg

Milling chuck - BT 40 SLA 20 - 90 | 353 6186 | **70,00**

- To seat the 3-D pushbutton
- Lateral seal
- Lateral clamping surface

Quick-action drill chuck 0 - 13 mm - BT 40 | 353 6183 | **149,00**

- Including hook spanner for locking

Collet fixture BT 40/ER 32 | 353 6182 | **95,00**

Accuracy 0.005 mm

Collet kit ER 32 | 344 1122 | **169,00**

- 18 collets 3 - 20 mm

Adapter Morse cone BT 40 - MT 3 | 353 6184 | **69,00**

Surface milling cutter seat - BT 40 (27 mm) | 353 6190 | **70,00**

Surface milling cutter | 353 6189 | **109,00**

- 63 mm · Hole 27 mm · Including cutter inserts

Spare cutter inserts | 353 0196 | **95,00**

- 10 pieces

Draw-in bolt BT 40 - 40 x 45° | 353 6185 | **7,90**

Draw-in bolt Sk 40 M16 | 353 6179 | **7,90**

Draw-in bolt BT 40 HC 40 | 353 6178 | **7,90**

- for F210 TC CNC assembly tools

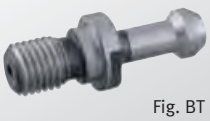
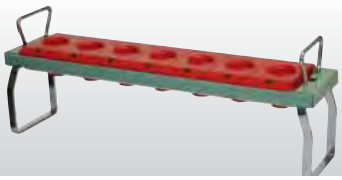


Fig. BT

Fig. SK

Tool deposit for BT 40 tools | 353 6188 | **65,00**

- Dimensions L x W x H: 595 x 143 x 225 mm



CNC

Modular vice for standard and individual manufacturing on CNC milling machines and machining centres

Hydraulic machine vice		
• Modular machine vice of high accuracy and repeatability		
• Solid structure for milling		
• Hardened and ground guide surfaces		
• Booster system, little effort, high pressure output when clamping		
• Wide span range due to retention pin with various pitches		
• High clamping power		
• Manufactured of high-grade special steel		
• Long service life due to high quality type		
• Clamping pressure 2500 kg/24.5 kN		
HCV 105	353 6210	**590.00**
HCV 125	353 6214	**1'190.00**

Technical data		L	B	C	j	a	T-slots	Clamping pressure	Clamping force	kg
HCV 105	mm	442	107	170	42	107	16	24,5 KN	2500 kg	22
HCV 125	mm	478.5	140	205	45	126	18	40 KN	4000 kg	35.4

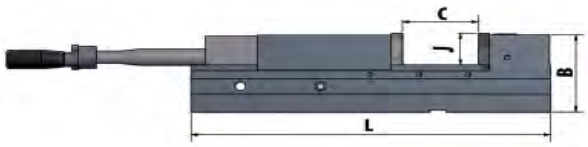


Fig.: HCV 105

Fig.: HCV 125

OPTIMUM precision modular vices PNM		
• Modular vice		
• Rotary table		
• Especially appropriated for tool manufacturig, mould making and construction of jigs and fixtures		
• Material made of alloyed tool steel		
• Hardened and ground guidances		
• Rapid aligning on the machine table via longitudinal slots and transverse grooves		
• High precision		
• Easy-to-operate		
• Low installation height		
• Universally applicable		
• Applicable horizontally and vertically		
PNM 100	335 5551	**659.00**
PNM 125	335 5553	**829.00**

Technical data		A	B	C	D	E	F	G	H	kg
PNM 100	mm	180	100	270	85	20	30	95	35	10.3
PNM 125	mm	226	125	345	103	23	40	150	40	18.2

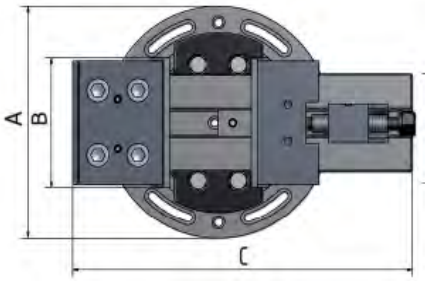


Fig.: PNM 100

quantum®

MASCHINEN - GERMANY

Bench drilling machines

Upright drilling machines

Radial drilling machines

Drilling-milling machines

Lathes

Sheet metal working machines

Metal belt saws

Double grinders

Disc grinders

Canting machine

Three-roller bending machines

Machine vice

Alligator shears

Arbor presses

Bench drilling machines with continuously adjustable speed

- Guaranteed concentricity precision better than 0.03 mm measured in the drilling spindle sleeve
- Drilling spindle with precision ball bearings
- Economically designed feed gear
- Considerably better power transmission due to the quality toothed V-belt
- Smooth running and powerful electric motor
- Very smooth running due to aluminium pulleys
- High-grade quick-action drill chuck supplied as standard
- Smoother running due to aluminum pulleys with ground multitooth dog
- Higher power transmission due to the quality toothed V-belt
- Drill depth stop

Fig.: **B 140 T Vario**

Model	quantum B 140 T Vario	quantum B 160 T Vario
Item No	301 1714	301 1716
€ plus VAT	**299.00**	**399.00**
Performance features		
Electric supply		
Motor	450 W 230 V ~50 Hz	600 W 230 V ~50 Hz
Drilling capacity		
Drilling capacity in steel (St. 37)	Ø 14 mm	Ø 16 mm
Drilling capacity in steel (St. 37)	Ø 12 mm	Ø 14 mm
Spindle seat		
Spindle seat	B 16	MT 2
Spindle sleeve stroke	45 mm	60 mm
Throat	102 mm	126 mm
Speeds		
Spindle speeds	180 - 3'000 rpm	180 - 3'000 rpm
Number of steps	2 steps infinitely variable	2 steps infinitely variable
Drilling table		
Table size (L x W) extendable	195 x 170 (270) mm	240 x 200 (340) mm
Groove width table	14 mm	14 mm
Drilling table inclinable	45°	45°
Drilling table slewable	360°	360°
Distance spindle - table (max.)	350 mm	400 mm
Working surface stand L x W	-	165 x 165 mm
T-slot size stand	-	16 mm
Distance spindle - stand (max.)	-	530 mm
Dimensions		
Column diameter	50 mm	60 mm
Length	410 mm	510 mm
Width	270 mm	380 mm
Height	730 mm	890 mm
Total weight	26 kg	40 kg
Scope of delivery	Quick-action drill chuck 0 - 13 mm Drill bit box	Quick-action drill chuck 0 - 16 mm Morse taper MT 2 - B 16 2 T-slots Drill bit box

Accessories	Item No	€ plus VAT
· Clamping tool kit SPW12 Metric screw-thread	335 2017	**79.00**

· Twist drill HSS MT 2 Right cutting 9-pcs	305 1002	**95.00**

· Titanium twist drills kit 25-pcs 1-13 mm	305 1010	**35.00**

· Machine vice MSO 100 Replaceable prismatic jaws Long guide of the mobile jaw, thus no tilting	300 0100	**22.90**

Please find accessories from page 25 on

Speed control
- Infinitely variable from 180 to 3'000 min via potentiometer

Drill depth stop
- Scale

Machine lamp
- Integrated

Drill chuck protection
- Best possible protection of the user
- Height-adjustable
- Microswitch

Drilling spindle
- Guaranteed concentricity precision better than 0.03 mm measured in the drilling spindle sleeve
- Precision ball bearings
- High-grade quick-action drill chuck supplied as standard

Drill bit box
- Integrated
- Handy

V-belt covering
- With safety switch

Electric motor
- Smooth running
- Powerful

Feed wheel
- Economically designed

Height adjustment drilling table
- Via toothed rack (B 160 T Vario)

Steel column
- Thick-walled
- Ensures very high power absorption and stability

Drilling table
- Precisely machined
- Extendable
- Inclinable 45°
- Rotatable 360°

Base plate
- Machined
- T-slots for vice fixture (B 160 T Vario)

Fig.: **B 160 T Vario**

Quality V- belt
- Toothed
- Considerably higher power transmission

Aluminium pulleys
- Smooth running

Safety switch
- Protection class IP 54
- Low-voltage release
- Emergency-stop pushbutton
- Easy-to-operate

Solid and cost-efficient - bench and upright drilling machines

- Guaranteed concentricity precision better than 0.03 mm measured in the drilling spindle sleeve
- Precision machined worktable with transversally runningT-slots (B13 - 16 groove), ± 45° inclinable and 360° rotatable
- Drilling spindle with precision ball bearings
- Smoother running due to aluminum pulleys with ground multitooth dog
- Higher power transmission due to the quality toothed V-belt
- Long, economically designed star grip with soft grip handles for safe working
- High-grade quick-action drill chuck supplied as standard
- Powerful, smooth running aluminum electric motors (from B 14 on)
- Solid, largely dimensioned base plate with T-slots, heavily ribbed at the backside
- T-slots to fix a vice supplied as standard (from B 14 on)
- 400 volt models with additional right-/left-handed rotation camshaft controller
- Drill depth stop
- Of millionfold proven quality

Fig.: **B 13**

Fig.: **B 14**

Fig.: **B 16**

Fig.: **B 20**

Model	quantum B 13	quantum B 14	quantum B 16	quantum B 20
Item No	300 8131	300 8141	300 8161	300 8201 (230 V)
€ plus VAT	**119.00**	**165.00**	**259.00**	**349.00**
Item No	-	-	-	300 8203 (400 V)
€ plus VAT	**-**	**-**	**-**	**379.00**
Performance features				
Electric supply				
Motor	300 W 230 V ~50 Hz	350 W 230 V ~50 Hz	450 W 230 V ~50 Hz	0.55 kW ~50 Hz
Drilling capacity				
Drilling capacity in steel (St. 37)	Ø 13 mm	Ø 14 mm	Ø 16 mm	Ø 20 mm
Drilling capacity in steel (St. 37)	Ø 12 mm	Ø 12 mm	Ø 15 mm	Ø 18 mm
Spindle seat				
Spindle seat	firm/B16	firm/B16	MT 2	MT 2
Throat	104 mm	104 mm	125 mm	170 mm
Spindle sleeve stroke	50 mm	50 mm	65 mm	80 mm
Speeds				
Spindle speeds	520 - 2'620 rpm	520 - 2'620 rpm	660 - 2'500 rpm	210 - 2'220 rpm
Number of steps	5 steps	5 steps	5 steps	12 steps
Drilling table				
Table size Length x Width	160 x 160 mm	160 x 160 mm	200 x 200 mm	275 x 275 mm
T-slot size (slot width)	14 mm	14 mm	14 mm	14 mm
Drilling table inclinable/rotatable	± 45° / 360°	± 45° / 360°	± 45° / 360°	± 45° / 360°
Distance spindle - table (max.)	240 mm	330 mm	390 mm	450 mm
Working surface stand (L x W)	135 x 175 mm	140 x 180 mm	160 x 170 mm	205 x 200 mm
Distance spindle - stand (max.)	325 mm	440 mm	525 mm	635 mm
Dimensions				
Column diameter	46 mm	46 mm	60 mm	70 mm
Length x Width x Height	420 x 220 x 580 mm	420 x 230 x 700 mm	510 x 270 x 820 mm	700 x 300 x 990 mm
Net weight	19 kg	21 kg	36 kg	53 kg
Scope of delivery	Gear rim drill chuck (1 - 13 mm)	SS-BF (0 - 13 mm) 2 T-slots	SS-BF (0 - 16 mm) 2 T-slots Morse taper MT 2	

Fig.: **B 25** Fig.: **B 32**

Model	quantum B 25	quantum B 32
Item No	300 8253	300 8323
€ plus VAT	**429.00**	**669.00**
Performance features		
Electric supply		
Motor	0.55 kW 400 V ~50 Hz	1.1 kW 400 V ~50 Hz
Drilling capacity		
Drilling capacity in steel (St. 37)	Ø 20 mm	Ø 32 mm
Drilling capacity in steel (St. 37)	Ø 18 mm	Ø 28 mm
Spindle seat		
Spindle seat	MT 3	MT 4
Throat	170 mm	225 mm
Spindle sleeve stroke	80 mm	125 mm
Speeds		
Spindle speeds	210 - 2'220 rpm	140 - 2'020 rpm
Number of steps	12 steps	9 steps
Drilling table		
Table size Length x Width	275 x 275 mm	360 x 360 mm
T-slot size	14 mm	14 mm
Drilling table inclinable	± 45°	± 45°
Drilling table slewable	360°	360°
Distance spindle - table (max.)	760 mm	600 mm
Working surface stand	235 x 220 mm	260 x 270 mm
Distance spindle - stand (max.)	1'210 mm	1'170 mm
Dimensions		
Column diameter	70 mm	92 mm
Length x width x height	690 x 390 x 1'570 mm	790 x 400 x 1'730 mm
Net weight	60 kg	135 kg
Scope of delivery	SS-BF (0 - 16 mm)	SS-BF (0 - 16 mm)
	2 T-slots	2 T-slots
	Morse taper MT 3	Morse taper MT4

- Smoother running due to aluminum pulleys with ground multitooth dog
- Considerably better power transmission due to quality toothed V-belt

- Guaranteed concentricity precision better than 0.03 mm measured in the drilling spindle sleeve
- Drilling spindle with precision ball bearings
- High-grade quick-action drill chuck supplied as standard

- Long, economically designed star grip with soft grip handles for safe working
- Drill depth stop

- User-friendly safely switch for IP 54 with low-voltage release, Emergency-stop pushbutton
- Right-/left-handed rotation for 400 volts or Vario machines

Please find accessories from page 25 on

Light-weighted radial drilling machines with large working range for wood, plastic and aluminium

- Smoother running due to aluminum pulleys with ground multitooth dog
- User-friendly safety switch for IP 54 with low-voltage release
- Guaranteed concentricity precision better than 0.03 mm measured in the drilling spindle sleeve
- Drilling spindle with precision ball bearings
- High-grade gear rim drill chuck supplied as standard
- Drill chuck protection
- Solid, largely dimensioned base plate with T-slots, heavily ribbed at the backside
- Very high transmission due to the toothed quality belt
- Emergency-stop pushbutton
- Long, economically designed star grip with soft grip handles for safe working
- Optimum price/quality ratio
- Value stability

Model	quantum RB 6 T	quantum RB 8 S
Item No	300 9161	300 9181
€ plus VAT	**299.00**	**349.00**
Performance features		
Electric supply		
Motor	750 W 230 V ~50 Hz	
Drilling capacity		
Drilling capacity in steel (St. 37)	Ø 16 mm	
Drilling capacity in steel (St. 37)	Ø 12 mm	
Spindle seat		
Spindle seat	MT 2	
Throat	115 - 430 mm	
Spindle sleeve stroke	80 mm	
Speeds		
Spindle speeds	390 - 3'000 rpm	
Number of steps	5 steps	
Drilling table		
Table size length x width	225 x 230 mm	262 x 262 mm
Slot size	14 mm	
Drilling table inclinable	± 45°	
Distance spindle - table (max.)	380 mm	740 mm
Distance spindle - stand (max.)	550 mm	1'250 mm
Dimensions		
Column diameter	60 mm	70 mm
Length x width x height	820 x 290 x 930 mm	820 x 290 x 1,640 mm
Total weight	40 kg	63 kg
Scope of delivery	Gear rim drill chuck (1-16 mm) B 16	
	Morse taper MT 2 - B 16	
	Drill chuck protection	

Accessories	Item No	€ plus VAT
· Clamping tool kit SPW12 Metric screw-thread	335 2017	**79.00**
· Twist drill HSS MT2 Right cutting 9-pcs	305 1002	**95.00**
· Titanium twist drills kit 25-pcs 1-13 mm	305 1010	**35.00**
· Machine vice MSO 100 Replaceable prismatic jaws Long guide of the mobile jaw, thus no tilting	300 0100	**22.90**

Please find accessories from page 25 on

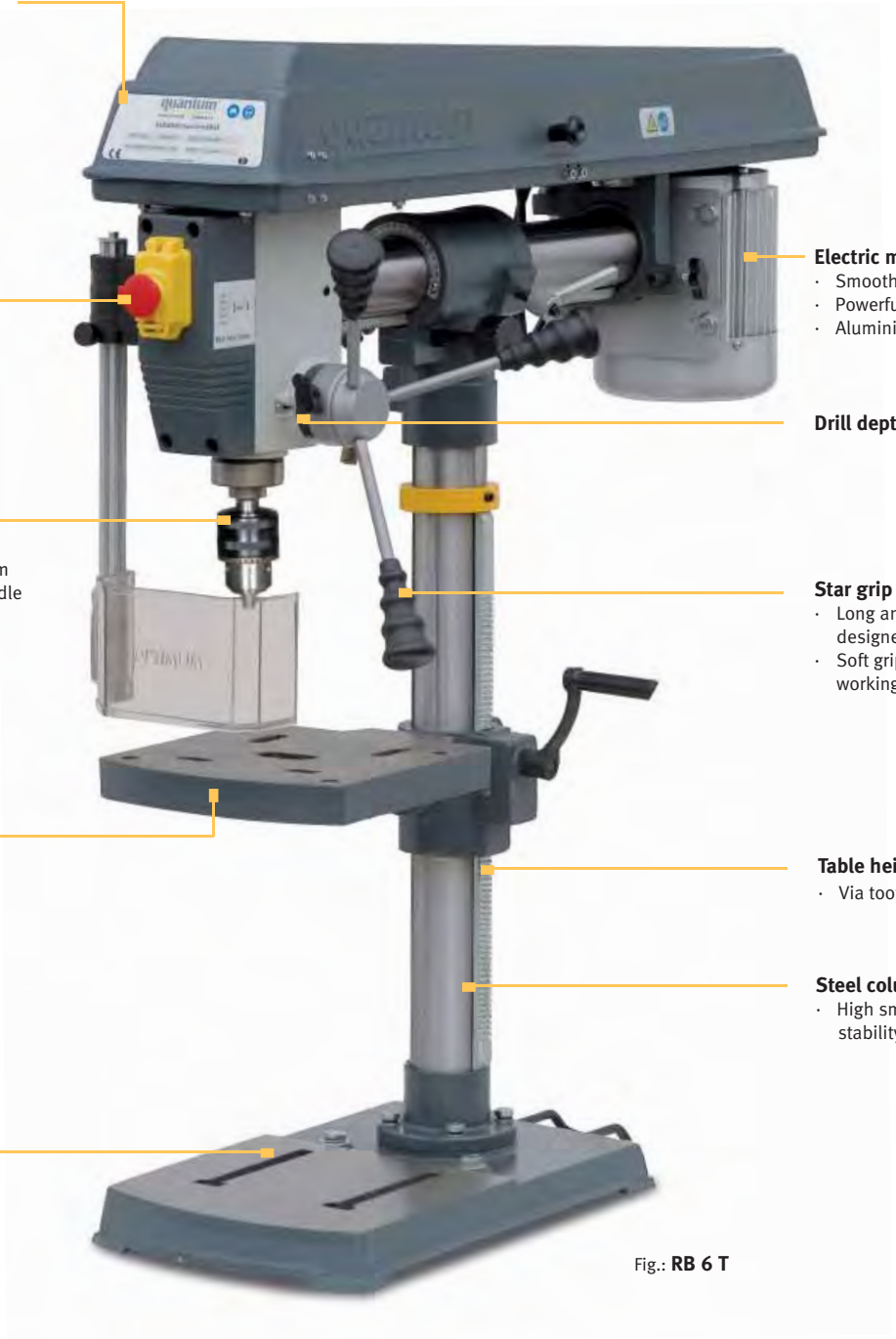
Quality V- belt
- Toothed
- Considerably higher power transmission

Safety switch
- Easy-to-operate Protection class IP 54
- Low-voltage release
- Emergency-stop pushbutton

Drilling spindle
- Guaranteed concentricity precision better than 0.03 mm measured in the drilling spindle sleeve
- Precision ball bearings
- High-grade gear rim drill chuck supplied as standard
- Drill chuck protection with safety switch

Working table
- Precisely machined
- With mounting holes for enlarged table rest (RB6T)

Base plate
- Solid and largely dimensioned
- Grooves for T-slots
- Heavily ribbed at the backside



Electric motor
- Smooth running
- Powerful
- Aluminium housing

Drill depth stop

Star grip
- Long and economically designed
- Soft grip handles for safe working

Table height adjustment
- Via toothed rack

Steel column
- High smooth running and stability

Fig.: **RB 6 T**

- The drill head is inclinable by ± 45°

- Working range is variable by shifting off the drill head

- The working table is inclinable by ± 45°

Small low-cost drilling-milling machine for demanding model makers

- Wide range of applications
- Two-step gear multiplication
- With dynamic infinitely variable drive from 100 to 3'000 rpm
- Drilling-milling head is inclinable to any direction by 90° and thus allows milling and drilling operations at any angular position
- Column laterally adjustable for further applications
- Simple and clear control panel
- User-friendly safety switch for IP 54 with low-voltage release
- Possibility of fixing for all travels
- Tool holding fixture MT2
- High concentricity precision due to taper roller bearings, better than 0.015 mm measured in the spindle sleeve
- Stable and precise dovetail control adjustable via V-ledges on all 3 axes
- Clear surface of milled work due to individually clampable guides
- Solid, precisely machined cross table with T-slots and coolant gutter
- Height-adjustable screening grid
- All travels are readable on scales
- Produced according to toolmaker's precision with test certificate
- Price-efficient and stable value

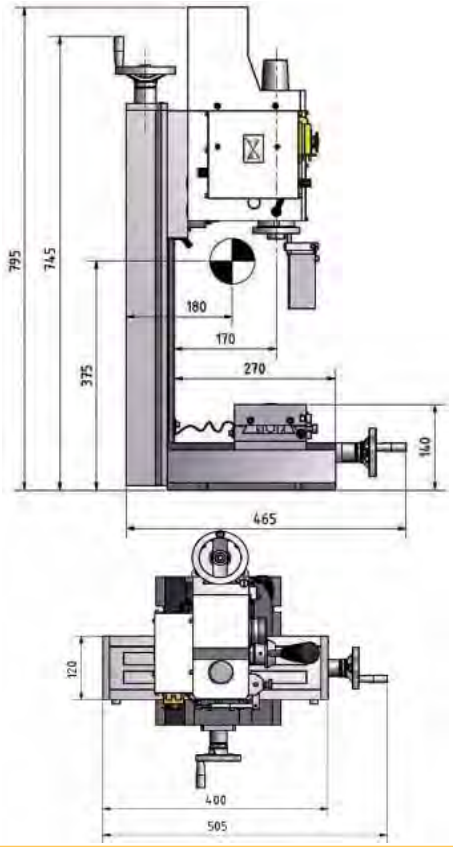
Model	quantum BF16 Vario
Item No	333 8116
€ plus VAT	**899.00**
Performance features	
Electric supply	
Motor	500 W 230 V ~50 Hz
Drilling-milling capacity	
Drilling capacity in steel (St. 37)	Ø 16 mm
Drilling capacity in steel (St. 37)	Ø 12 mm
Spindle seat	
Spindle seat	MT 2/M 10
Milling head capacity max.	Ø 63 mm
Milling end mill capacity max.	Ø 20 mm
Spindle sleeve stroke	50 mm
Throat	175 mm
Drill-mill head	
Swivel range	± 90°
Travel Z axis	210 mm
Gear stage slow	100 - 1'500 rpm
Gear stage fast	200 - 3'000 rpm
Cross table	
Table length	400 mm
Table width	120 mm
Travel X-axis	160 mm
Travel X-axis	220 mm
T-slot size/Distance	10 mm/35 mm
Dimensions	
Length	505 mm
Width	465 mm
Height	795 mm
Total weight	60 kg
Scope of delivery	Draw-in rod M 10
	Taper mandrel MT2/B16
	Operating tool

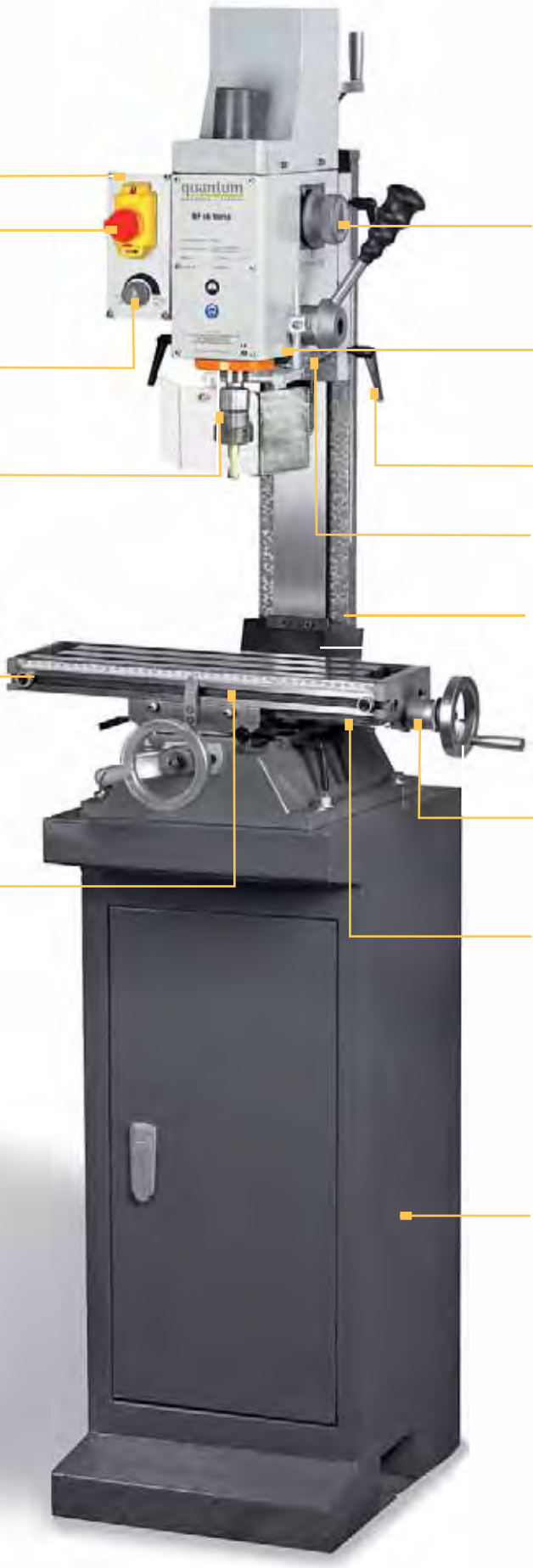
Accessories	Item No	€ plus VAT
· Collet chuck kit MT2/M10, 5-pcs	335 1980	**89.00**
· Collet chuck kit ER 25, 15-pcs	344 1109	**149.00**
· Milling cutter kit TiN-coated, 12 pcs.	335 2113	**59.00**
· Quick-action drill chuck (0-13 mm) B16	305 0623	**31.00**
· cutter holding arbor 16 mm MT2/M10	335 2102	**39.00**
· Holding arbor for drill chuck MT2/M10	305 0670	**14.90**
· Clamping tool kit SPW 8	335 2015	**69.00**
· Triaxial vice MV3-75	335 4175	**175.00**
· Vice with two axes ZAS 50	335 4170	**99.00**
· Add-on adapter To assemble a column and a milling head on the engine bed of the lathes: D 240/D 280/D 250	335 6568	**99.00**
· Add-on adapter **(without motor)** To assemble a high-speed motor (up to 26'000 rpm) L x W x H: 120 x 195 x 185 mm Seat: ø 43 mm	335 6567	**99.00**
· Dig. magnetic measuring MPA 3-S	338 3902	**749.00**
· Factory assembly MPA 3-S	900 0420	**390.00**

Information about MPA 3-S on page 98

Please find more accessories from page 53 on

Dimensions





Control panel
- Simple
- Clearly arranged

Safety switch
- Easy-to-operate
- Protection class IP 54
- Low-voltage release
- Emergency-stop pushbutton

Speed adjustment
- Infinitely variable from 100 to 3'000 rpm

High concentricity precision
- Due to taper roller bearings better than 0.015 mm measured in the spindle sleeve

Cross table
- Solid and precisely machined
- T-slots
- Coolant gutter
- Adjustable limit stops

Feed spindle
- Clearance of the feed spindle adjustable and readjustable

Gear multiplication
- Two-step

Drill-mill head
- Inclinable by ± 90° on both sides for milling and drilling tasks at angular positions as required

Guidings
- Clear surface of milled work due to individually clampable guides

Angle adjustment
- In the drilling-milling head

Column
- Solid and precisely machined
- Dovetail slide way
- Adjustable via V-ledges on all 3 axes

Handwheels
- Accurate infeed by positioning graduated collars on any handwheels

Length measurement scale
- Integrated in the cross table

Optional accessories
Universal substructure
- Shelf
- Chip tray
- Dimensions L x W x H: 500 x 420 x 800 mm

Item No 335 3003
€ 259.00 plus VAT

Accessories for drilling

		B140 T Vario	B160 T Vario	B13	B14	B16	B20	B25	B32 / Vario	RB 6T	RB 8 S
	Direct quick-action drill chuck 0 - 8 mm/MT 2	305 0582	—	●	—	—	●	●	○	○	●	●
	Direct quick-action drill chuck 0 - 13mm/MT 3	305 0585	—	—	—	—	—	—	●	○	—	—
	Direct quick-action drill chuck 0 - 13mm/MT 4	305 0587	—	—	—	—	—	—	—	●	—	—
	Quick-action drill chuck MT2	305 0571	—	●	—	—	●	●	—	—	●	●
	Quick-action drill chuck MT2	305 0572	—	●	—	—	●	●	—	—	●	●
	Quick-action drill chuck MT3	305 0573	—	—	—	—	—	—	●	—	—	—
	Quick-action drill chuck MT4	305 0574	—	—	—	—	—	—	—	●	—	—
	Precision quick-action drill chuck 0 - 8 mm, B16	305 0608	●	●	●	●	○	○	○	○	—	—
	Precision quick-action drill chuck 0 - 10 mm, B16	305 0610	●	●	●	●	○	○	○	○	—	—
	Precision quick-action drill chuck 0 - 13 mm, B16	305 0623	●	●	●	●	○	○	○	○	—	—
	Precision quick-action drill chuck 0 - 16 mm, B16	305 0626	—	●	—	●	○	○	○	○	—	—
	Röhm quick-action drill chuck 1 - 13 mm, B 16	305 0656	●	●	●	●	○	○	○	○	—	—
	Röhm quick-action drill chuck 3 - 16 mm, B 16	305 0657	●	●	●	●	○	○	○	○	—	—
	Reducing bushes MT 3 - MT 2	305 0663	—	—	—	—	—	—	●	—	—	—
	Reducing bushes MT 4 - MT 3	305 0664	—	—	—	—	—	—	—	●	—	—
	Reducing bushes MT 4 - MT 2	305 0665	—	—	—	—	—	—	—	●	—	—
	Morse taper MT 2 - B16	305 0659	—	●	—	—	●	●	—	—	●	●
	Morse taper MT 3 - B16	305 0660	—	—	—	—	—	—	●	—	—	—
	Morse taper MT 4 - B16	305 0661	—	—	—	—	—	—	—	●	—	—
	Morse taper MT 5 - B16	305 0675	—	—	—	—	—	—	—	—	—	—
	Morse taper MT 6 - B16	305 0676	—	—	—	—	—	—	—	—	—	—
	Titanium twist drill kit 13 mm	305 1010	●	●	●	●	●	●	●	●	●	●
	Twist drill HSS / MT 2	305 1002	—	●	—	—	●	●	○	○	●	●
	Twist drill HSS / MT 3	305 1003	—	—	—	—	—	—	●	○	—	—
	Threading attachment M5 - M12	335 2042	●	●	●	●	●	●	●	●	●	●
	Taper drift MSP1	305 0636	—	●	—	—	●	●	●	—	●	●
	Taper drift MSP2	305 0637	—	—	—	—	—	—	—	●	—	—
	Clamping tool kit SPW 8	335 2015	—	—	—	—	—	—	—	—	—	—
	Clamping tool kit SPW 10	335 2016	—	—	—	—	—	—	—	—	—	—
	Clamping tool kit SPW 12	335 2017	●	●	●	●	●	●	●	●	●	●
	Clamping tool kit SPW 14	335 2018	—	—	—	—	—	—	—	—	—	—
	Clamping tool kit SPW 16	335 2019	—	—	—	—	—	—	—	—	—	—
	Universal coolant equipment 230 V	335 2002	●	●	●	●	●	○	○	○	●	●
	Universal coolant equipment 400 V	335 2001	—	—	—	—	—	●	●	●	—	—
	Coolant lubricant sprayer MMC 1	335 6663	●	●	●	●	●	●	●	●	●	●
	Coolant hose KMS 2	335 6660	●	●	●	●	●	●	●	●	●	●
	Machine vice MSO 75	300 0075	●	●	●	●	●	●	●	○	●	●
	Machine vice MSO 100	300 0100	●	●	●	●	●	●	●	○	●	●
	Machine vice MSO 125	300 0125	●	●	●	●	●	●	●	●	●	●
	Machine vice MSO 150	300 0150	○	●	○	○	●	●	●	●	●	●
	Machine vice BMS 85	300 0008	●	●	●	●	●	●	●	●	●	●
	Machine vice BMS 100	300 0010	●	●	●	●	●	●	●	●	●	●
	Machine vice BMS 120	300 0012	●	●	●	●	●	●	●	●	●	●
	Machine vice BMS 150	300 0015	○	●	○	○	●	●	●	●	●	●
	Machine vice BMS 200	300 0020	—	○	—	—	○	○	○	●	○	○
	Machine vice BSI 100	300 0210	●	●	●	●	●	●	●	●	●	●
	Machine vice BSI 140	300 0214	○	○	○	○	○	●	●	●	○	○
	Machine vice BSI 200	300 0220	—	—	—	—	—	○	○	●	—	—

● Recommended ○ Partly recommended — Not recommended *) Morse taper MT - B16 required

This table of accessories includes all recommended options of accessories. Depending on the individual case it may however be practical to use other accessories.

quantum®
MASCHINEN - GERMANY

Compact lathe. Perfect for model makers

- Precise manufacturing
- DC motor with permanent speed monitoring
- Ribbed prismatic lathe bed made of grey casting, inductively hardened and precision ground
- Hardened and ground bed guideways
- Guaranteed concentricity precision of the spindle nose better than 0.015 mm
- Concentricity precision - lathe chuck max. 0.05 mm
- With saddle slide, compound slide and top slide
- Automatic longitudinal/leading spindle drive
- Large threading range due to change gear kit
- With leading spindle for threading or automatic longitudinal turning
- Lathe chuck protection
- Right-/left-handed rotation switchable in the control panel
- Precisely machined slide made of grey cast iron
- Handwheels with adjustable precision scaling of 0.04/0.01 mm
- Double tool holder
- All guidings adjustable without clearance via V-ledges
- Comprehensive accessories
- Test certificate

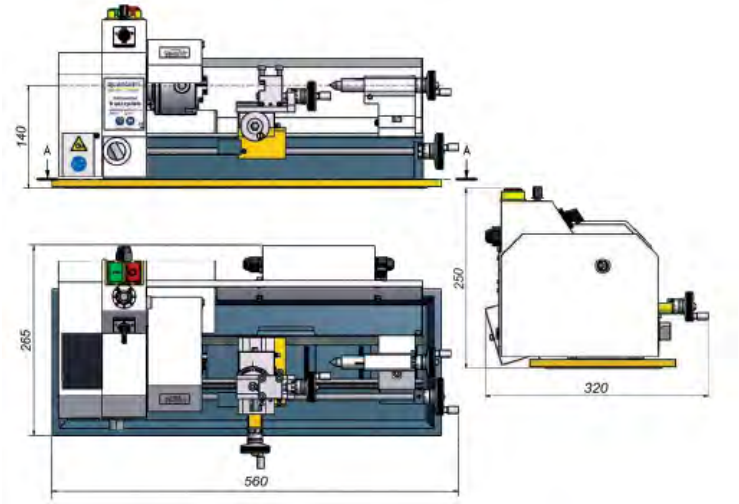
- Electronic, infinitely variable speed control with dynamically adjustable control, especially high capacity from 120 rpm on
- Leading spindle connectable and disconnectable

- With change gear kit for threading
- Easy and fast speed change via V-belts

Model	D 140 x 250 Vario
Item No	342 0251
€ plus VAT	**629.00**
Performance features	
Electric supply	
Motor power	450 W 230 volts ~50 Hz
Machine data	
Centre height	70.5 mm
Centre width	250 mm
Turning diameter (max.)	141 mm
Spindle speed	120 - 3'000 rpm
Number of steps	speed controllable
Spindle taper	MT 1
Spindle hole	11 mm
Bed width	70 mm
Top slide - travel	40 mm
Cross slide - travel	70 mm
Tailstock seat	MT 1
Tailstock - sleeve travel	30 mm
Longitudinal feed	0.05 - 0.1 mm/rev
Pitch - Metric	0.5 - 1.5 mm/rev
Quadruple tool holder Seat height (max.)	12 mm
Dimensions	
Length x Width x Height	560 x 320 x 250 mm
Net weight	22 kg

Scope of delivery 3-jaw chuck Ø 80 mm, steady centre MT 1, lathe chuck protection, splash board, chip tray, double tool holder, change gear kit, test certificate

Dimensions



Accessories	Item No	€ plus VAT
· 3-jaw chuck Ø 80 mm	344 0287	**71.00**
· 4-jaw chuck Ø 80 mm	344 0288	**67.00**
· Follow rest	344 0283	**13.00**
· Steady rest	344 0284	**15.00**
· Revolving centre MT 1	344 0700	**35.00**
· Collet chuck ER 16	344 0281	**39.00**
· Collet chuck kit ER 16, 1 - 10 mm, 12-pcs	344 0282	**179.00**
· Lathe tool kit 8 mm, 11 pieces	344 1008	**59.90**
· Lathe tool kit HM 8 mm, 7 pieces	344 1011	**89.00**

Please find more accessories from page 84 on

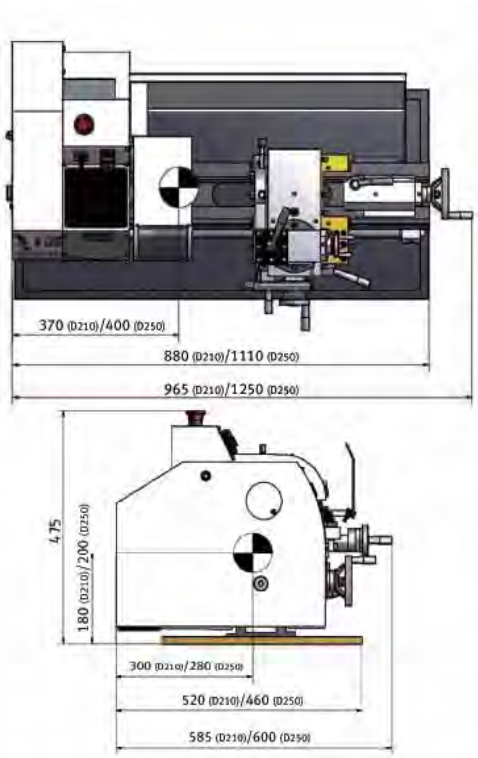
Lathes for the demanding user.
"VARIO" - type with infinitely variable speed control.

- quantum o 250 "Vario" type with extreme high-torque and mostly constant torque progression
- With leading spindle for threading or automatic longitudinal turning
- Guaranteed concentricity precision of the spindle nose better than 0.009 mm
- Hardened and ground bed guideways
- Concentricity precision - lathe chuck better than 0.05 mm
- Precise manufacturing
- Automatic longitudinal/leading spindle drive
- Leading spindle run on two porous bearings
- Wide range of threading due to change gear kit
- High-quality lathe chuck protection
- Right-/left-handed rotation switchable in the control panel
- Emergency-stop pushbutton and low-voltage release
- Comprehensive accessories
- Test certificate
- Value stability

Fig.: **D 210 x 400 Vario**

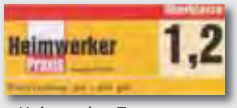
Model	**D 210 x 400**	**D 250 x 550**
Item No (230 V)	342 0321	342 0550
Item No (400 V)	-	342 0553
€ plus VAT	**1'090.00**	**1'290.00**
Model	**D 210 x 400 Vario**	**D 250 x 550 Vario**
Item No	342 0324	342 0556
€ plus VAT	**1'350.00**	**1'550.00**
Performance features		
Electric supply		
Motor	750 W 230 V ~50 Hz	750 W ~50 Hz
Motor "Vario machines"	750 W 230 V ~50 Hz	1.1 kW 230 V ~50 Hz
Machine data		
Centre height	105 mm	125 mm
Centre width	400 mm	550 mm
Turning Ø over lathe bed	210 mm	250 mm
Bed width	125 mm	135 mm
Spindle speed	125 - 2'000 rpm	
Number of steps	6 steps	
Spindle speed "Vario"	150 - 2,200 min^{-1}	150 - 2,800 min^{-1}
Number of steps "Vario machines"	2 steps, infinitely variable	
Spindle taper	MT 3	
Spindle hole	21 mm	
Top slide - travel	70 mm	
Cross slide - travel	110 mm	
Tailstock taper	MT 2	
Tailstock - sleeve travel	70 mm	
Longitudinal feed	0.1 - 0.2 mm/rev	
Pitch - Metric	0.4 - 3.5 mm/rev	
Pitch - Inch	44 - 10 threads/1"	
Quadruple tool holder seat height	12.5 mm	13 mm
Dimensions		
Length x Width x Height	965 x 585 x 475 mm	1'250 x 600 x 475 mm
Net weight	110 kg	125 kg
Scope of delivery: 3-jaw chuck Ø 100 mm (D210), 3-jaw chuck Ø 125 mm (D250), steady centre MT2, steady centre MT3, lathe chuck protection, lathe dog, HSS lathe tool, splash board, chip tray, quadruple tool holder operating tool, change gear kit, 10 pcs. from 0.4 up to 3 mm and inch-based (44-10 threads /") thread, test certificate		

Dimensions



Heimwerker Test testing:
Working with the D210 is rather addictive. If you start working with this machine you will not be able to stop. In our test all common variants of turning had been tested. The results had been good already for the first trials.

Upshot Heimwerkertest



Heimwerker Test 02.2005

Trapezoid spindles
- Rolled

Chip protection
- At the top slide

Slide
- Precisely machined
- Handwheels with adjustable precision scaling of 0.04/0.01 mm
- Quadruple tool holder
- All guidings adjustable via V-ledges

Tailstock
- Adjustable for taper turning
- Tailstock spindle sleeve and handwheel with adjustable precision scaling of 0.02 mm

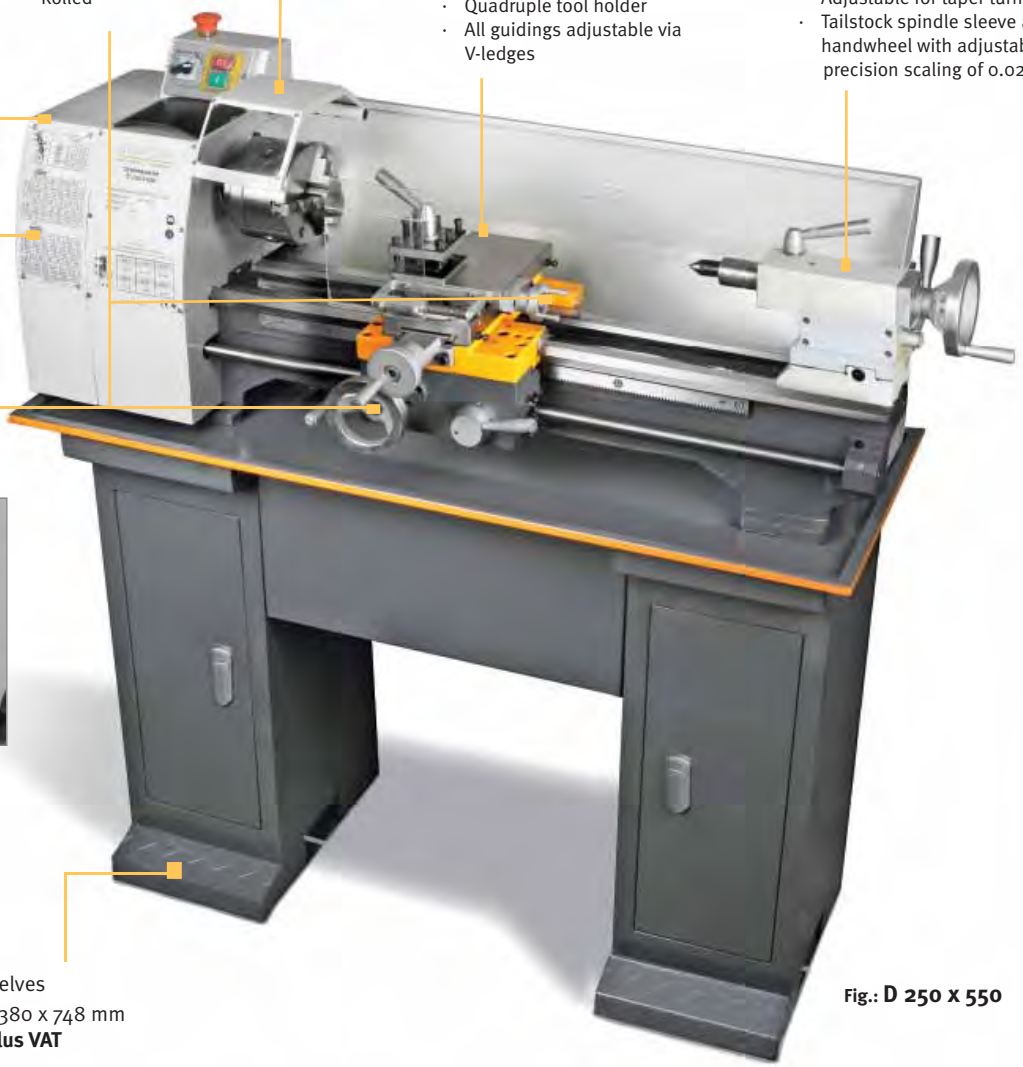
Change gear kit
- For threading
- Easy and fast speed change via V-belts

Taper roller bearings
- Two pieces
- P5 quality

Thrust bearing

Leading spindle
- Running on two porous bearings

Prismatic bed
- Solid, aged made of grey casting
- Matured for at least six months
- Inductively hardened (HRC 42-52)
- Precision ground



Optional machine base with shelves
- **D 250 x 550:** L x W x H: 1'000 x 380 x 748 mm
- Item No 344 0507; **€ 299.00 plus VAT**

Fig.: **D 250 x 550**

Accessories D 210	Item No	€ plus VAT
· ROHM 3-jaw chuck Ø 100 mm	344 1010	**269.00**
· ROHM 4-jaw chuck Ø 100 mm	344 1012	**299.00**
· Lathe chuck flange Ø 100 mm	344 0312	**70.00**
· Lathe chuck flange Ø 125 mm	344 0313	**70.00**
· Plane clamping disc Ø 200 mm	344 0352	**50.00**
· Revolving centre MT 2	344 0702	**45.00**
· Steady rest	344 0315	**45.00**
· Follow rest	344 0310	**45.00**
· Lathe tool kit HM 8 mm, 7 pieces	344 1011	**89.00**
· Lathe tool kit 8 mm, 11 pieces	344 1008	**59.90**
· Lathe tool kit HM 10 mm, 7 pieces	344 1111	**110.00**
· Lathe tool kit 10 mm, 11 pieces	344 1108	**59.90**
· Lathe tool kit HM 12 mm, 9 pieces	344 1211	**129.00**
· Collet chuck ER 25	344 0305	**70.00**
· Collet chuck ER 32	344 0306	**79.00**
· Collet chuck kit ER 25, 1 - 16 mm	344 1109	**149.00**
· Collet chuck kit ER 32, 3 - 20 mm	344 1122	**169.00**
· Quick-action tool holder SWH 1-A	338 4301	**419.00**
· Factory assembly SWH	900 0401	**60.00**

Please find more accessories from page 84 on

Accessories D 250	Item No	€ plus VAT
· ROHM 3-jaw chuck Ø 125 mm	344 1025	**295.00**
· ROHM 4-jaw chuck Ø 125 mm	344 1027	**330.00**
· Lathe chuck flange Ø 125 mm	344 0511	**70.00**
· Plane clamping disc Ø 250 mm	344 0552	**50.00**
· Revolving lathe centre MT2	344 0702	**45.00**
· Steady rest	344 0515	**45.00**
· Follow rest	344 0510	**45.00**
· Lathe tool kit HM 8 mm, 7 pieces	344 1011	**89.00**
· Lathe tool kit 8 mm, 11 pieces	344 1008	**59.90**
· Lathe tool kit HM 10 mm, 7 pieces	344 1111	**110.00**
· Lathe tool kit 10 mm, 11 pieces	344 1108	**59.90**
· Lathe tool kit HM 12 mm, 9 pieces	344 1211	**129.00**
· Collet chuck ER 25	344 0505	**80.00**
· Collet chuck ER 32	344 0506	**90.00**
· Collet chuck kit ER 25, 1 - 16 mm	344 1109	**149.00**
· Collet chuck kit ER 32, 3 - 20 mm	344 1122	**169.00**
· Quick-action tool holder SWH 1-A	338 4301	**419.00**
· Factory assembly SWH	900 0401	**60.00**
· Add-on adapter for assembly of column and milling head of the BF20(l) Vario	335 6572	**99.00**
· Add-on adapter for assembly of column and milling head of the BF16 Vario	335 6568	**99.00**

Light-weighted belt saws to work metals with slewable saw bow for mitre cuts, perfect for the use on construction sites

- 3-point ball bearing saw band guide
- Three speeds for a largely variable choice of materials
- S 121 G with automatic limit stop after finishing the sawing operation
- Saw bow slewable from 0° up to 45° to enable angular saws
- Well readable scale for angular adjustment
- S 121 G with standard quick-action clamping vice
- Feed adjustable with spring
- Saw band tension adjustable by means of the handwheel at the front
- Material limit stop
- S 121 G included handy base

Fig.: **S 91 G**

Fig.: **S 121 G**

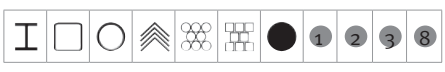
Model	quantum S 91 G	quantum S 121 G
Item No	330 0091	330 0121
€ plus VAT	**289.00**	**399.00**
Performance features		
Electric supply		
Motor power	400 W 230 V ~50 Hz	550 W 230 V ~50 Hz
General		
Lifting the saw bow	manual	manual
Feed	Lowering via spring	Lowering via spring
Saw band speed	20/29/50 m/min	21/31/54 m/min
Saw band dimension	1'300 x 12.7 x 0.5 mm	1'638 x 13 x 0.65 mm
Dimensions		
Length	730 mm	950 mm
Width		
without material limit stop	270 mm	550 mm
with material limit stop	430 mm	620 mm
Height		
lower stop position saw bow	450 mm	1'060 mm
upper stop position saw bow	650 mm	1'430 mm
Net weight	26 kg	56 kg
Scope of delivery		Base
	Bimetallic saw band	
	Material limit stop	

Cutting range S91 G		0°	45°
Round material max.		Ø 90 mm	Ø 65 mm
Rectangle max.		90 x 130 mm	65 x 50 mm

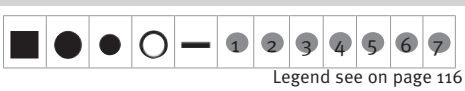
Cutting range S121 G		0°	45°
Round material max.		Ø 115 mm	Ø 100 mm
Rectangle max.		100 x 150 mm	85 x 65 mm

Saw bands HSS bimetallic M 42

(S91G)	**Tooth number 10 - 14 TPI;Tooth angle 0°** 335 1509	**14.00**
(S121G)	**Tooth number 10 - 14 TPI;Tooth angle 0°** 335 1518	**17.00**
(S121G)	**Tooth number 6 - 10 TPI;Tooth angle 0°** 335 1512	**17.00**



(S121G)	**Tooth number 6 TPI; Tooth angle 10°** 335 1511	**17.00**



Legend see on page 116

quantum®
MASCHINEN - GERMANY

Solid band saw for metal working with infinitely variable, hydraulic lowering

- User-friendly safety switch for IP 54 with low-voltage release
- Four speeds adjustable by changing the V-belt position
- Large wheels and handy transport strap allow trouble-free position change of the metal band saw
- Solid casting type
- Automatic limit stop
- Silent operation
- Chip brush

- Lowering of the saw bow using a hydraulic supporting cylinder, continuously adjustable

- Ball bearing 3-point saw band guiding, sustainable and easily adjustable
- Coolant equipment supplied as standard

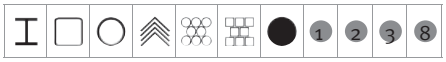
- Quick-action vice with miter-slewing clamping jaws from 0° up to 45°

Sawing

Model	quantum S 181
Item No	330 0181
€ plus VAT	**1'090.00**
Performance features	
Electric supply	
Motor power	750 W 400 V ~50 Hz
General	
Lifting the saw bow	manual
Feed	infinitely variable
Saw band speed	21/33.5/45/50 m/min
Saw band dimension	2'362 x 19 x 0.9 mm
Dimensions	
Length	1'295 mm
Width	
without material limit stop	450 mm
with material limit stop	600 mm
Height	
lower stop position saw bow	1'060 mm
upper stop position saw bow	1'550 mm
Net weight	130 kg
Scope of delivery	Bimetallic saw band
	Machine base
	Material limit stop
	Coolant equipment

Cutting range		0°	45°
Round material max.		Ø 178 mm	Ø 110 mm
Rectangle max.		178 x 240 mm 50 x 300 mm	170 x 110 mm

Saw bands HSS bimetallic M 42		
Tooth number 6 - 10 TPI; Tooth angle 0°	335 7521	**25.00**
Tooth number 5 - 8 TPI; Tooth angle 0°	335 7522	**25.00**



Tooth number 5 - 8 TPI; Tooth angle 6°	335 7516	**25.00**

Legend see on page 116

Double grinding machines by quantum®,
a quality product with an excellent price/performance ratio

- Solid quality double grinding machine for the professional processing of metal
- Heavy long-life type with maintenance-free motor for permanent use
- Housing made of aluminium die casting
- Balanced rotor with quality ball bearings ensures long service life and very smooth running
- Safety guards at every grinding disc reduce the flying of sparks
- Solid, adjustable workpiece rest
- Safety switch with low-voltage release and emergency stop
- Two universal corundum grinding discs included in delivery

Fig.: **QSM 175**

Model	quantum QSM 150	quantum QSM 175	quantum QSM 200
Item No	310 1815	310 1817	310 1820
€ plus VAT	**109.00**	**119.00**	**129.00**
Performance features			
Electric supply			
Motor power	450 W 230 V ~50 Hz	450 W 230 V ~50 Hz	450 W 230 V ~50 Hz
Grinding discs			
Dimensions	Ø 150 x 20 Ø16 mm	Ø 175 x 20 Ø32 mm	Ø 200 x 25 Ø32 mm
Speed	2850 rpm	2850 rpm	2850 rpm
Dimensions			
Height x length x width	200 x 410 x 295 mm	220 x 420 x 300 mm	245 x 450 x 330 mm
Net weight	12 kg	14 kg	16 kg
Scope of delivery	Grinding disc fine standard corundum K80 Grinding disc coarse standard corundum K36		

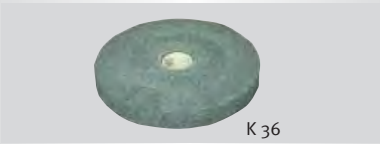
Pleas

Optional accessories

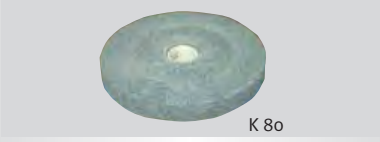
Wall unit
- L x W x H: 332 x 300 x 230 mm
  Item No 310 7050 **€ 29.00 plus VAT**

Machine base
- L x W x H: 320 x 270 x 820 mm
  Item No 310 7100 **€ 69.00 plus VAT**

Machine base SSM
- Shelf and cooling water tray
- L x W x H: 345 x 300 x 785 mm
  Item No 310 7101 **€ 229.00 plus VAT**



Grinding discs
Coarse standard corundum K 36
- Ø 150 x 20 Ø 16 mm 310 7150 **7.00**
- Ø 175 x 20 Ø 32 mm 310 7170 **10.00**
- Ø 200 x 25 Ø 32 mm 310 7200 **13.00**



Grinding discs
Fine standard corundum K 80
- Ø 150 x 20 Ø 16 mm 310 7155 **7.00**
- Ø 175 x 20 Ø 32 mm 310 7175 **10.00**
- Ø 200 x 25 Ø 32 mm 310 7205 **13.00**

quantum®
MASCHINEN - GERMANY

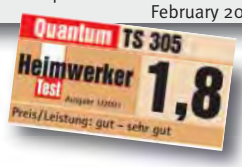
Disc wheel grinder for surface treatment of metals

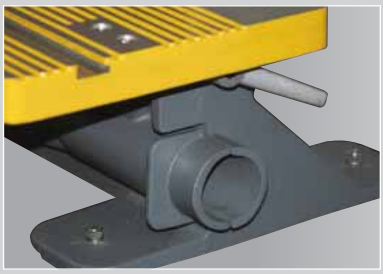
- Wide range of applications
- For rough, fine and form grinding
- Suction hole to connect a suction device, supplied as standard
- Grinding table inclinable by ± 45°
- Mitre gauge inclinable by ± 60° supplied as standard
- Solid and stable machine body
- Balanced aluminium disc plate for smooth running
- Powerful motor
- Sanding discs with Velcro are of very good adherence, can be easily replaced
- Glued on grinding disc as basic equipment

At a flat angle

"Smooth running, powerful, versatile and extremely steady: The TS 305 by quantum will become an often used machine in all shops."

Upshot of Heimwerker Test - February 2003





- Serial suction nozzles of two diameters to connect an exhaust system
- Nominal width inside about ± 23/30 mm
- Nominal width outside about ± 30/38 mm

- Mitre gauge wilh a slewing range of ± 60° supplied as standard
- Grinding table inclinable by ± 45°

- Sanding discs with Velcro are of very good adherence and can be easily replaced

Grinding

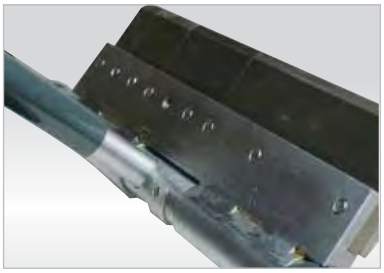
Model	quantum TS 305
Item No	331 0305
€ plus VAT	**199.00**
Performance features	
Electric supply	
Motor power	900 W 230 V ~50 Hz
General	
Grinding disc diameter	305 mm
Speed	1420 rpm
Table support	155 x 440 mm
Adjustment of the angular limit stop	± 45°
Dimensions	
Length x Width x Height	360 x 440 x 400 mm
Net weight	30 kg
Scope of delivery	Adjustable angular limit stop Grinding disc on grinding disc is self-adhesive

Accessories	Item No	€ plus VAT
· Velcro fixing	335 7801	**12.90**
Grinding disc - with Velcro		
· Grain 40*	335 7854	**9.90**
· Grain 60*	335 7856	**9.90**
· Grain 80*	335 7858	**8.90**
· Grain 100*	335 7860	**8.90**
· Grain 120*	335 7862	**8.90**
· Grain 150*	335 7865	**8.90**

***Packing and price unit 5 pcs.**

Folding machine quantum FP 30 - universally applicable

- **Folding machine quantum FP 30** to bend and cant off sheet plates
- Removable bending jaw segments
- Comfortable slewing movement of the bending jaw by lever handle
- To be used with a vice



- Removable bending segments 150 mm / 75 mm / 50 mm / 25 mm
- High-grade quality bending jaw

Fig.: Folding machine **FP 30** on optional **WBS 135**

Model	**quantum FP 30**
Item No	324 4028
€ plus VAT	**129.00**

Performance features	
Material width (max.)	320 mm
Steel sheet thickness (max.)	2.5 mm

Folding capacity (max.)	
Aluminium/Copper	300 x 2 mm
Sheet metal	300 x 1 mm
Net weight	10 kg

Three-roller round bending machine quantum BM 3 - universally applicable

- Bending and rolling of wires, tubes and sheet plates
- Ground bending rolls
- Lateral jaws made of steel running on bearings (self-lubricating)
- Two removable rollers
- Separate setting for material thickness and rolling radius
- To be used with a vice
- Solid support surface

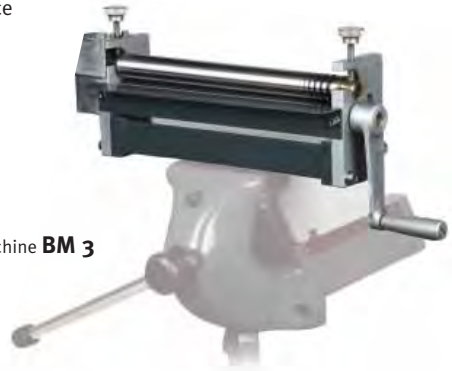
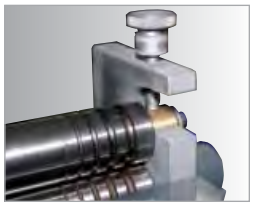
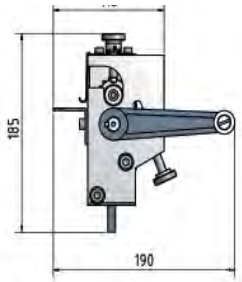
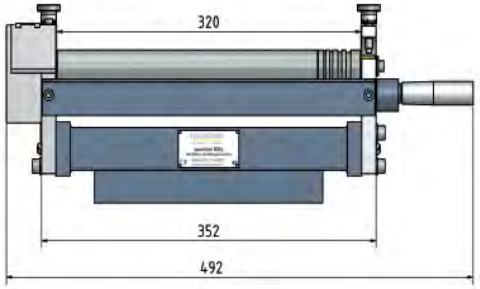


Fig.: Round bending machine **BM 3** on optional **WBS 135**



- Wire insertion grooves Ø 1 - 2 - 3 - 4 - 5 mm





Modell	**quantum BM 3**
Item No	324 4030
€ plus VAT	**139.00**

Performance features	
Material width (max.)	310 mm
Bending ø (min.)	35 mm
Bending ø (max.)	unlimited
Net weight	10 kg

Roller thickness (max.)	
Sheet metal St. 37	1 mm
Stainless steel	1 mm
Aluminium/Copper	2 mm
Brass	1 mm
Gold/Silver/Tin plate	2 mm
Small widths	3 mm
Round material	1 - 5 mm
Unwinding cylinders ø	30 mm

The qualitatively high-grade bench-type vice with pedal for safe and fast clamping

- Outstanding quality, versatile equipment as well as practical handling are making the WBS 135 a multitalent in each shop
- Bench-type vice opens backward
- Adjustable dovetail slideway ensures maximum parallelism for a long time
- Save guiding of the workpiece also in wide unscrewed status
- Vice with integrated scale
- Very long service life due to spherical casting with a strength of 500 Nm/mm^2
- By using the clamping jaws supplied as standard, it is possible to clamp any kind of workpiece and material correctly, securely and gently

- This system allows you rapid and easy replacing of individually required clamping or tool jaws.

- The workpiece can be held in hands.
  The foot pedal is used to pre-clamp the workpiece

Model	WBS 135
Item No	300 0513
€ plus VAT	**319.00**
Technical data	
Jaw width	135 mm
Jaw depth to upper part (a)	110 mm
Jaw depth to spindle bushing (s)	72 mm
Tool net weight (max.)	50 kg
Clamping way foot pedal (max.)	45 mm
Span	195 mm
Bench thickness (max.)	40 mm
Net weight	26 kg

Accessories clamping jaws

Fig.: smooth jaws

Fig.: grooved jaws

Fig.: protection jaws made of aluminium

Fig.: prism jaws 0° / 90°

Accessories 300 0518 **129.00**

· Sheet shear · Bending jaws · Tube jaws · Canting jaws

Sheet shear

- Material can be optionally cut using the pedal or the clamping lever
- Section width 60 mm
- Section thickness (steel sheet) 1.5 mm

Canting jaws

- Material can be folded up to a steel sheet thickness of max. 200 mm
- Side length unlimited towards the top
- Side length limited towards the bottom by the edges of the vice and of the spindle

Bending jaws

- With the help of the **bending jaw** accessory kit it is possible to bend solid material of up to 5 mm or unhardened copper pipe of a diameter of 6 to 12 mm

Tube jaws

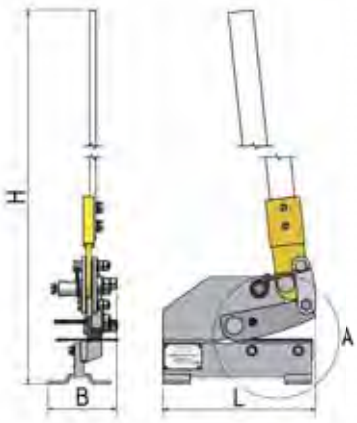
- The laterally elongated **tube jaws** allow trouble-free clamping of bars and pipes in vertical position
- Lateral projection 30 mm

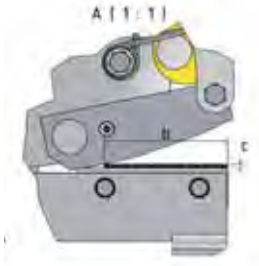
Angular stop

- Adjustable from 30° to 90°
- Angular stop as saw guiding particularly appropriate for recurrent sawing tasks.

Alligator shears to cut steel, a quality product made by quantum® for the craft

- To cut steel sheets and steel sheet profiles
- Stable shears' body
- Economically good cutting geometry
- Easy, power-gentle cutting over the whole cutting length
- Additional passing through hole below the cutter for exact separation of round material
- Solid handle ensures a good hold
- High-grade cutters
- The workpiece to be cut is kept in a horizontal position with the adjustable holding-down clamps
- A powerful spring prevents the shears from self-acting closing
- Safe foot and holes for stationary fixture





- High-grade cutter of long service life
- Adjustable holding-down clamp

- Passing through hole below the cutter for exact separating of round material up to Ø 10 mm

- A powerful spring prevents the shears from self-acting closing

Model	quantum PS 125	quantum PS 150	quantum PS 300
Item No	324 1006	324 1007	324 1012
€ plus VAT	**99.00**	**139.00**	**199.00**
Cutting capacity			
Round material max (a)	Ø 6 mm	Ø 8 mm	Ø 10 mm
Material lengths max (b)	95 mm	115 mm	235 mm
Material thicknesses (c)	3 mm	4 mm	4 mm
Height x length x width	245 x 110 x 935 mm	325 x 120 x 960 mm	490 x 155 x 1.340 mm
Net weight	10 kg	12 kg	25 kg

Kit of replacement cutters, 2 pcs	Item No	€ plus VAT
· for PS 125	324 1025	**35.00**
· for PS 150	324 1026	**45.00**
· for PS 300	324 1028	**99.00**

quantum®
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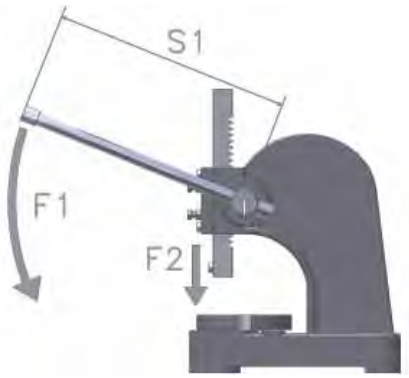
Precision lathe mandrel of robust and solid type.
For mechanic shops and repair shops

- To mould in and to crush bearings, mandrels, bushings, spindles, pins
- Stable construction
- Body made of high-grade grey casting
- Variably adjustable lever rod
- Quadruple positionable base plate
- To be fixed on a bench
- 3 different types

Model	DDP 1	DDP 2	DDP 3
Item No	335 9001	335 9002	335 9003
€ plus VAT	**75.00**	**135.00**	**219.00**
Technical data			
Height of workpiece max.	123 mm	195 mm	310 mm
Throat	95 mm	135 mm	160 mm
Dimensions			
Length x Width x Height	270 x 130 x 325 mm	430 x 175 x 445 mm	455 x 205 x 575 mm
Size of tappet (LxWxH)	25 x 25 x 245 mm	31 x 31 x 336 mm	40 x 40 x 455 mm
Seat hole for tools in the ram	Ø 10 mm; depth 26	Ø 13 mm; depth 28	Ø 13 mm; depth 32
Weight	16 kg	38 kg	67 kg
Scope of delivery	Lever arm Quadruple positionable plate		



Effect of power		DDP 1			DDP 2			DDP 3		
Manual power	F1	392.4 N	490.5 N	589 N	392.4 N	490.5 N	589 N	392.4 N	490.5 N	589 N
		(40 kg)	(50 kg)	(60 Kg)	(40 kg)	(50 kg)	(60 Kg)	(40 kg)	(50 kg)	(60 Kg)
Length of lever arm	S1	305 mm			405 mm			540 mm		
Effect of power	F2	7'480 N	9'350 N	11'220 N	8'364 N	10'455 N	12'555 N	7'705 N	9'632 N	11'566 N
		(763 Kg)	(935 kg)	(1'143 kg)	(853 kg)	(1'065 kg)	(1'280 kg)	(786 kg)	(982 kg)	(1'179 kg)

Pressing

Steel sheet processing machines 3 in 1. Round bending, folding and cutting. Perfectly appropriate for demanding users

- Modern structural shape of stable steel structure
- High design flexibility by segmented folding bar
- Detachable segment pieces can be taken out of the folding jaw
- Operation via two laterally placed levers
- Long support surface
- Extendable support arm for safe positioning of large format steel sheets
- Scissor table with embedded measuring tapes and right-angled stop on both sides
- Easily adjustable top rear and bottom rolls
- Large adjustable and easy operable lever arms
- Extractable rear stop and front material support for safe positioning

Model	SAR 1000
Item No	324 2100
€ plus VAT	**1'550.00**
Technical data	
Material width (max.)	700 mm
	Round bending
Bending ø (min.)	48 mm
Bending ø (max.)	unlimited
Sheet metal St. 37	up to 1 mm
Stainless steel	up to 0.5 mm
Aluminium/Copper	up to 1.5 mm
Brass	up to 1 mm
Gold/Silver/Tin plate	up to 1.5 mm
Unwinding cylinders ø	42 mm
	Folding
Steel sheet thickness (max.)	2.5 mm*
Aluminium/Copper	up to 1.5 mm
Sheet metal St. 37	up to 1 mm
Number of segments	7
	Cutting
Cutting capacity (max.)	up to 1 mm
Net weight	290 kg

Scope of delivery
Adjustable rear stop
Front material support bed
Tool

*cannot be realised over the whole manufacturing widths

Optional accessories
Base
- Dimensions L x W x H:
  1'185 x 500 x 700 mm
  Item No 324 2107
  € 329.00 plus VAT

Round bending

- Adjusting screws for the material thickness with scaling
- Ground bending rolls with wire insertion grooves at the bottom and front roll for bending and rolling of wires, tubes and steel sheets ø 10 mm/ ø 7 mm/ ø 4.5 mm

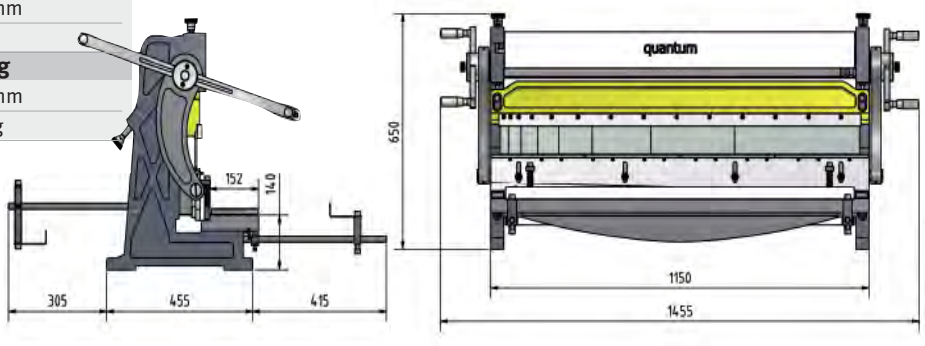
Folding

- High quality folding jaws
- Key holding-down clamp
- Retractable segment pieces
- To be taken out from the folding jaws 40 mm/50 mm/65 mm/100 mm/ 180 mm/255 mm/380 mm for folding of cartridges

Cutting

- Neat and burr-free cutting by means of top and bottom knife made of quality steel

Dimensions



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